Periodical

The AMERICAN RIFLEMAN

The Rifle 1885, Shooting & Fishing 1888, Arms & the Man 1906

VOLUME LXXIII NUMBER 15

JAN 1 8 1926

JANUARY 1, 1926

The Rime of the U. S. S. "Ship-o'-State"
Louis V. Manning

The 110-Grain Springfield on Game
Elmer Keith

An Old-Time Sniper
W. H. Richard

Notes on the Cleaning of Firearms
Major J. S. Hatcher

An Outdoorsman's Handgun
J. V. K. Wagar

A Man Size Pistol
Hans Roedder

The Determination of the Time of Flight
Edgar Bugless-Wallace H. Coxe

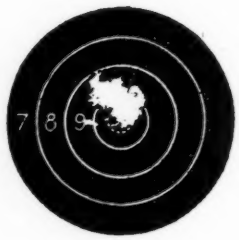
$3.00 the year *20 cents the copy*

Coeur d'Alene Rifle Club
Likes Remington Palma

Mr. H. E. McEnen, a prominent member of the Coeur d'Alene Rifle Club, Coeur d'Alene, Idaho, has just sent us the originals of eight targets shot by A. J. Cole of the same club representing in all 40 consecutive shots at 50 feet, prone, in a Model 22 Springfield rifle, with regulation iron sights and Remington Palma .22 Long Rifle cartridges.

In his letter to us Mr. McEnen comments as follows:

> "Our club as a whole has been using .22 Palma for the past three years with very good success, turning in some very good scores."



This is a fair sample of many thousand such letters we receive annually from those who have used this splendid cartridge.

There are those who say the Remington Palma .22 Long Rifle cartridge will not shoot accurately in the Government Springfield rifle. We offer these targets as mute testimony to the contrary and to those who are still doubtful we suggest a trial at the first opportunity.

Uniform, accurate, dependable are the three cardinal virtues of the Remington Palma cartridge.

REMINGTON UMC

REMINGTON PALMA

THE ACCURACY CARTRIDGE

REMINGTON UMC

The AMERICAN RIFLEMAN

The Publication of the National Rifle Association of America

Entered as second-class matter, April 1, 1908, at the Postoffice at Washington, D. C., under Act of Congress of March 3, 1879

Vol. LXXIII, No. 15 | WASHINGTON, D. C., JANUARY 1, 1926 | $3.00 a Year. 20 Cents a Copy

The Rime of the U. S. S. "Ship-o'-State"

ARGUMENT: *The* U. S. S. "SHIP-O'-STATE," *becalmed on the ocean of International Tranquillity, is enmeshed in a dead sea of Foreign Entanglements and Human Affairs: the action thereafter.*

By Louis V. Manning

I.

First-class Passenger:

"I've COME AWAY with my valet
From off the tug 'N'Yawk,'
Whose stately boards as high-born lords
In majesty we stalk.

"By nature bold, I therefore hold
Chief's papers on the craft:
My word is law: my 'hem' and 'haw'
Shake her both fore and aft.

"For my valet I wish to say
He's known both far and wide:
His famous pills cure all the ills;
His unctions cure the hide.

"I'd have you know my medico
Is smart as smart can be,
For when he needs a plea to plead
He gets the plea from me.

"So, Skipper of the 'Ship-o'-State,'
Take heed of my valet:
Your vessel rides on idle tides
And rots both night and day.

"Athwart your beam the powerless moon
Looks down in helpless fright,
For well she knows what Terror goes
Abroad your boat at night.

"Along the deck of your old wreck
From rudder-post to boom,
On spike and bolt the rampant Colt
Hath clicked the hoofs of Doom.

"And Smith & Wesson romp at night
With hordes of mutineers
Till every plank goes dark and dank
With blood and idle tears.

"About, about, with sniveling snout
And gaping eyes and maw,
The wraith of Sully treads her deck
And cries aloud for 'Law.'

"Good Skipper, say the kindly word
To save your fore-damned bark:

The first-class passenger discourseth on his own credentials:

and those of his valet.

Of the valet's smartness.

He calleth attention to the deplorable condition of our Uncle's ship:

and speaketh of Horrors:

of the ravages of our Uncle's foal: and his crew:

also of the haunt:

and adviseth that the foal and the crew be Jonahed:

Take Smith & Wesson and the Colt
And heave them to the shark."

The Valet:

"Yes, Uncle, say the kindly word
And save your damned old ark:
Take Smith & Wesson and the crew
And heave them to the shark."

his valet concurreth.

The Skipper:

"Your words be odd. The Grace of God
Hath kept my craft afloat
Upon the sea a century,
And they go with the boat.

The Skipper remonstrateth:

"For know that in my Charter's writ,
In words that all might see,
That Smith & Wesson and the rest
Shall sail the seas with me."

First-class Passenger:

"Your Charter is a thing of grass—
I'll put them on the shelves!
Just charge the horde to stay on board
And they'll get off themselves."

but is out-clamored by the others.

The Valet:

"Just charge the crew to ride with you
And they'll get off themselves."

The Skipper:

"Your words be queer: they grate my ear
And give my brain a jolt,
For Smith & Wesson be good hands:
I've often used the Colt."

the argument continueth:

First-class Passenger:

"O Skipper! Lo! The sun has set
Behind the idle tide:
A stagnant sea of misery
Your ancient craft does ride.

whereupon the first-class passenger calleth attention to further woeful particulars: to the rats, and so forth

"Athwart your beam the stars will gleam
In horror at your deck
As gray rats wheel, and black rats reel,
And gallop, neck to neck.

"Their evil pranks across your planks
Makes e'en the moon revolt—
By what sound rule are you a fool
That you should keep the Colt?

"For lo! from out the cattle-hold
The vile rats crawl and creep
And vile rats leave the fo'c'sle
Where the Smith & Wesson sleep."

The Skipper:

Our Uncle remonstrateth:

"The rampant Colt doth jump and bolt
And stamp the rats to death,
And Smith & Wesson kill them off
As fast as they draw breath.

"Forsooth—the rats will leave the hold.
Forsooth—the fo'c'sle too.
They'd show no brain should they remain
In quarters with my crew."

First-class Passenger:

but is again out-clamored.

"O doddering dolt! The rampant Colt
Doth feed the filthy rat,
And Smith & Wesson give them scraps,
And you may lay to that!"

The Valet:

The argument continueth.

"Aye: Smith & Wesson save their meals
And feed them to the rat."

The Skipper:

"Quite so, quite so. 'Tis truth, I know,
That rats provoke my crew.
What do you find, in your grave mind,
That I had better do?
To leave the ship unto the rats,
Or rats unto the crew?"

First-class Passenger:

The first-class passenger compareth the deplorable condition of our Uncle's boat with the chemical purity of the vessel on which he holdeth Chief's papers:

"I wot and ween you have not seen
How useless they can be:
As Chief upon the tug 'N'Yawk'
They were no good to me.

"I speak from long experience,
And service on the bench:
I know a filthy rat-hole, Sir,
And know a rat-hole's stench:

"And rats will breed, and rats will feed
Down in a cattle-hold,
And in the fo'c'sle of a ship
The filthy rats grow bold:

"So on our craft we have a rule
To care for such as that:
No Smith, no Wesson, and no Colt,
And Sir, I sure know rats."

The Valet:

his valet concurreth.

"None of your crew can board our tug,
But God knows we have rats."

The Skipper:

Our Uncle obstinately refuseth to listen to reason, but speaketh in defense of his foal and his crew: and of the possibilities of a storm.

"So I've observed, so I've observed.
Ah, well, the night grows dark:
No use to waste your idle words
About an idle bark.

"The law ye have for harbor craft
Is no law for the sea:
And this I state: the crew ye hate
Shall sail this ship with me.

"Through seas forlorn my vessel's gone
Well handled by my crew:
Through many a breath that stunk with death
My men were tried—and true.

"Time was when, through the wilderness,
I rode the rampant Colt:
I rode him to the Indian wars,
And rode him through revolt.

"He kicked a hole in Spanish craft
When woeful times were mine.
And Smith & Wesson cleared the decks
Of Wilhelm's Ship-o'-the-Line.

"It is not meet that I should greet
My crew with your decree.
For hammer and pin, they all have been
Flag-makers, along with me.

"And look ye there: the sultry air
Behind the idle main
Tells to the sea that times may be
When I'll need them again.—

"ACROSS THE DEEP dark shadows creep:
The stars give little light:
'Tis fitting that we go to rest:
Good gentlemen—good night."

The three retire.

II.

The calm continueth;

ALL IDLY THEN the "Ship-o'-State"
Lolled in the rotting slime,
Nor flapped her canvas in a wind
Nor sang her ropes a rhyme:

then cometh the haunt, which telleth of

When from the gloom and murk aboard
And from the dark abeam
A woeful shade did serenade
The victim of the stream.

Around, around, with hollow sound
From bowsprit to the stern,
"Oho," he cried, "the stagnant tide
Will claim you in your turn.

"Again, again the blood of men
Is poisoning your planks:
So look ye down to New York town
And give to me your thanks.

the marvelous benefits derived by the Empire State from sundry anti-pistol laws.

"The pistols bark in every park
And murders are the rage;
With shuffling feet, on every street
A gangster's war they wage;

"While here and there, in hall and stair,
The bandits ply their trade—
In perfect safety shoot the man,
In safety rape the maid.

"The honest man must go to jail
If he should bear an arm,
For who can tell by what strange spell
A rat may come to harm?

"Oho," he said, "the murdered dead
Abhor the law we've made,
But here it's praise in hymns that raise
Among the rat's brigade."

THEN IN AND OUT and all about
Come rats in droves and hordes:
With many a squeak through sniveling beak
They gnawed the vessel's boards.

With many a squeal the rats did reel
The vessel's decks along;
They gnawed the planks, they gnawed the beams,
They sang their chantey-songs:

Blue Rats:
"We'd have you know that Mister Doe
Quite badly needs Reform:
He's far too happy as he is,
And that will lead to harm."

Yellow Rats:
"Our conscience's forbid that we
Should ever go to war—
It's terrible to think that things
Might stay just as they are."

Red Rats:
"How could it be that you-ski
Could want a pistol-vick?
All men-ska should be Comrades—
Besides, you're hard to lick."

White Rats:
"O, let us say we hope and pray
Your heart will rule your brain;
That when you catch a murderer
You'll turn him loose again."

Gray Rats:
"Ve haf a kind off feelingk vot
Ve got uns in der Var,
Dot dis here Anti-pistols bills
Shouldt haff been didt before."

Pink-sheet Rats:
"You will observe across our page
In letters huge and loud:
'A pistol is an awful thing':
We cater to the crowd."

Alley Rats:
"An' we should fret about de law,
Fer w'en de time is ripe,
Wid lilt an' song we'll work along
By means o' clubs an' pipe."

Lily-livered Rats:
"O evil day! That men should say
A word of future war.
A 'scrap of paper' is our guard
And men will fight no more."

Raw-throat Rats:
"Us guys declare, affoim an' swear
De law will get our vote:
We got no use fer pistols w'en
We goes to cut a t'roat."

Tong Rats:
"O Holy Smoke! Hi Lo go bloke
If allee pistol stop-stop?
Usee hatchet, usee cleavah—
Velly nicely chop-chop."

The appearance of the rats: their labors and their antics.

Chanteys of the various rats,

of divers breeds and colors,

giving their various logics

and indisputable reasons:

House Rats:
"De Magistrate is right as hell:
We follys on his tack.
Fer sometimes w'en we robs Doe's house
He shoots us in de back."

Black-hand Rats:
"You no' forget, ol' Joe Spagget',
An' he's-a not so dumb.
He wan' ta keel, ol' Joe he weel
Mos' lakely use da bomb."

Sea Rats:
"As sailors bold we fill the hold
With opium and rum:
We will not pause at any laws
That are—or are to come."

ABA Rats:
"Whereas we are well learned in laws,
And money-getting ways;
And we have found, with brains profound,
Just what the Charter says:

"The right to arms is not infringed;
For, as the Charter states,
A penance cruel is not the rule
When laws are violate.

"We therefore ween the screed to mean
'The right to arms' implies
That people's arms be not cut off
For telling little lies."

particularly, the courthouse rats.

THEN ON THE DECK mid wrack and wreck
Came cats in blue and tan,
Their silver stars upon their breasts—
And off the decks they ran.

The ship's cats appear;

"Ah me!" they cried, "we like to died
Of fright and fear and skeer—
How can we catch a rat apiece
With Smith & Wesson near?

but are badly affrighted.

"God save the mark! The ways be dark
Of that pair and the Colt—
'Tis best we lock us in the brig
And draw our pay, and molt."

Now here—now there—now everywhere,
The vessel's rodents reel:
With tooth and paw they rip and claw
From mizzen-stick to keel.

The rats' labor continueth.

In scurrying crowds they tear her shrouds
And drop them in the brine:
In squealing hordes they gnaw the boards
Above the water-line.

MEANWHILE the first-class passenger
Came forth with his valet;
From wig and gown His Honor's frown
Glared out across the spray.

Reappearance of the first-class passenger and his valet.

"Now then," spoke he, "they have at sea
A signal for distress:
Run up the old rag hind-end to,
And clear us from this mess."

Without delay his dear valet,
In toga clad, and cold,

Inversion of Old Glorious, denoting something rotten in the "Ship-o'-State."

Laid violent hands upon the strands
And did as he was told.

Then darkly, darkly down the deck
His Honor softly steals,
His eye upon the fo'c'sle bent,
His valet at his heels:

They sneak into the glory-hole, — By virtue of their strategy,
And all prepared for strife,
They waken Smith & Wesson with:
"Your money or your life!"

Then Smith & Wesson wakened up, — and particularly by virtue of their official costumes,
And either dropped his jaw,
For toga, wig, and gown to them
Were symbols of the Law.

"We be but poor, of that be sure,
For we be humble men
Who sail the seas in Uncle's boat:
How can we pay you, then?"

"Then walk the plank, you villains rank! — they overcome the sailors.
The ship can well be rid
Of all its crew of brutes like you!"
And walk the plank they did.

Then this was done to Remington,
And Iver Johnson, too,
And from the plank the Savage sank,
And all the rest the crew.

Then through the gloom the swinging boom — The end of the foal.
Brought something from the hold,
And o'er the sea the Colt fell free
For Neptune to enfold.

III.

NOW, IN THE DARK our Uncle's bark — Acting according to its nature, the hitherto peaceful ocean goeth into upheaval.
Was pitched and tossed amain,
And bowled and hauled and rolled and mauled
And tossed and pitched again:

So down the deck our Uncle flew — The Skipper calleth his hands to their labor:
All through the wind and foam:
"Hey! Man the sheets! A strong wind beats—
We'll drive the old girl home!"

His voice resounds with empty sounds — but findeth himself forsaken by the crew.
Within the fo'c'sle then;
With hollow moan, he left alone
To travel aft again.

All brokenly he took the wheel, — The vessel's helpless condition.
All idly 'round it spun,
For rats had gnawed the rudder-lines
And left the craft undone.

MEANWHILE the first-class passenger — Positively the last appearance of the first-class passenger and his valet:
Came forth with his valet
And davits whirled and wheeled and twirled
As a boat was cast away.

"The storm!" they cried, "the thirsting tide — their woeful peril:
Will sink this rotten hull!
Let Uncle stay! We must away,
Or feed the shark and gull!"

So o'er the side the pair did slide,
And down the ladder sped:
With oar in hand for foreign land
They turned the life-boat's head.

But off the ship, with slide and slip, — which causeth the rats to desert the distressed vessel.
Came ranks and ranks of rats:
With yowl and meow, in tan and blue,
Came squads and squads of cats.

Beneath its weight of frightened freight — All the rats drown together.
Of man and cat and rat
The life-boat bogged and swamped and hogged—
And that's the end of that.

THEN THROUGH THE STORM a stranger form — A Jolly Roger taketh advantage of the turmoil: and of the vessel's helplessness.
Reached out with grappling steel,
And side by side the vessels ride,
And side by side they reel.

And o'er the rail the stranger sail — Perilous predicament of our Uncle:
Sent boarders by the score,
And through the spray this fierce array
Did press the Skipper sore.

So down the deck the Skipper flew
And called into the hold:
"Now, Sam; come, Sam. The pirate's here!
Come up and kick him cold."

But from the hatch no voice resounds
Except the Skipper's own:
So brokenly he crumpled in,
Unpistoled and alone.

All brokenly he crumpled in, — his sorrow and bereavement:
This man so lone and sad,
And muttered, "Boys, you've failed at last,
And Uncle needs you bad."

Then 'round and 'round the pirates bound — his finish.
The Skipper to the hatch,
And ransacked through the "Ship-o'-State"
With neatness and dispatch.

They pillaged her both port and star — The sack of the "Ship-o'-State;"
From scuttle-butt to keel;
They took the loot aboard their ship
Then cut away their steel.

THEN FAR AND WIDE the frenzied tide. — her pitiful predicament;
Boomed o'er the helpless craft:
It wracked the prow, it wrenched the stern,
It wrecked her fore 'n' aft.

The vessel moaned, the vessel groaned, — her helplessness, and
Her wrenching planking roared,
And through the holes which rats had made
The angry waters poured.

At last, at last, when thick and fast — particularly
There raged the angry main,
With hideous screams her rat-gnawed beams — her weakness.
Heaved in—and snapt in twain. — Her finish.

IV.

THERE IS A PLACE on ocean's face, — And thus doth the ocean of International Tranquillity, with its dead sea of Foreign Entanglements and Human Affairs, lay claim to Old Glorious.
All stagnant lies the tide,
And from the mass of twisted grass
A derelict mast does ride.

Inverted there in idle air,
The ship's flag hangs to rot:
The vessel's name, her Skipper's fame,
Are long forgot—forgot.

The 110-Grain Springfield on Game

By Elmer Keith

THIS fall I've been giving the Remington 110-gr. Hi-speed Springfield load a thorough try-out on various kinds of small game. This load traveling at 3500 feet per second is the fastest Springfield cartridge today. Before giving it a thorough trial I was a bit dubious about its accuracy, owing to its extremely short bullet and hence short bearing on the lands. However my doubts were soon dispelled on testing it while sighting in my heavy-barreled Springfield for coyotes. My groups ran an average of two to four inches at two hundred yards prone with sling and no rest, 5½-A Winchester scope, twenty-six-inch Winchester Sniper barrel and Nuesslein's set-triggers. My heartbeats were responsible for most of the wildest shots of the groups. At one hundred yards a five-shot group can almost be hidden by a silver dollar. This without any rest other than the service sling.

I firmly believe these groups will shrink considerably if fired from a good muzzle and elbow rest. At three hundred yards my five-shot groups ran from three to five inches. Anyway it is as accurate up to three hundred yards as any commercially loaded hunting ammunition. I have had a couple of unaccountables, both high and left, about ten o'clock. But these out of a large number of shots.

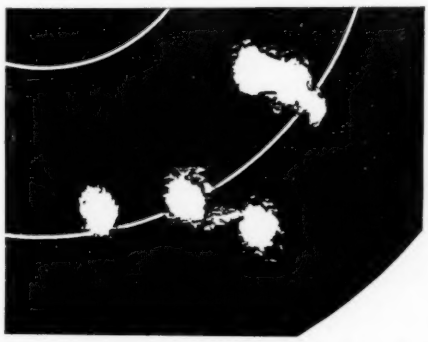
Over three hundred yards I'd prefer a 170 or 180-gr. match bullet, as I do not believe these short bullets capable of wind bucking at long range. Also due to their extreme light weight, they lose speed rapidly over this distance, but as an absolutely certain coyote stopper, it is unequalled, within this range.

After sighting-in on target until I was satisfied, I tried a small but worthless yellow cat at three hundred yards. This particular tabby was eternally headfirst in the milk pail, hence was sentenced to death. Could plainly hear the bullet strike him. Bullet landed just behind left shoulder and emerged on opposite side tearing a two-inch hole and removing about all of kitty's lungs and heart. A second shot fired at the same cat was one of the two unaccountables and went just over the cat's head with cross wires held behind shoulder.

My next shot was at a big dog coyote at two hundred yards. Crawled into sling and lay down prone, then a sharp whistle stopped him for that necessary five seconds. Held at belly line just behind shoulder. Scope set for three hundred yards. That little copper-jacketed slug made a noise when it hit, about like slapping a small board on water. Coyote went down instantly and turned all four feet up in the air as he stiffened out. Never moved otherwise. Bullet hit about center a little too high for the heart. Part of the stomach and liver projected through the two-inch hole on opposite side.

I set the scope for three hundred yards and held low at 150 to 200 yards. By holding at bottom of six-inch bull I land center.

A few days later I jumped four coyotes in a bunch. Two went over the hill at once. I whistled at the third and as he stopped to look back held on bottom of his chest, and tickled the set trigger. He went down with the same audible plop. The fourth coyote started over the hill and seeing this one down, shifted into high gear. When on the crest of the hill a sharp whistle brought him to a stop, but before I could press the set trigger he started again so I just set the cross wires in front of his nose and let go. He dropped so quick I did not



5 shots at 100 yards prone with sling, using the 110-grain Remington Hi-Speed cartridge in a heavy barreled Springfield rifle fitted with 5-A scope.

see where he went to, so I made a spirited sprint to the top of a nearby hill for another chance at him but no coyote in sight. Just then the first one regained his feet and headed for the bottom of the hill. Most of his inner workings including stomach were dragging. When he reached the gulch, he stopped to bite off this impeding and now very unnecessary rabbit-digester. I thought the coyotes were only two hundred yards so held at bottom of carcass again. This shot killed instantly and did not touch anything but this ball of protruding entrails, liver, etc. About eight yards beyond the coyote I found the main portion of his insides, scattered over an area of about five square yards. Counted ten pieces of intestine around one foot long, also bits of liver and stomach and about half of a jack rabbit from his stomach. Looked as though a one-pounder had connected with him. After pacing the distance several times I found the pup to be two hundred and fifty-three yards. Found the second pup dead. Bullet had hit upper half of his nose breaking lower jaw also, and shattering his skull.

Last spring I shot one coyote center through both shoulders with a 172-gr. soft point tearing a two-inch hole. After which he got up and went about one hundred yards before I knocked him down again. He then regained his feet and traveled about fifty yards when the third shot finished him. I do not know of any American game animal capable of standing the shock like a coyote unless it is goat or bear.

However this 110-gr. bullet must get its killing power from its speed. The faster the bullet the more certain it is on coyotes and the more uncertain on heavy game. Thus we need a different load for different game. When sighting in, I found about two-thirds of each bullet behind target showing plainly that this particular bullet does not completely disintegrate. The forward one-third goes to pieces but the rest hangs together. An old fish-eating crane at three hundred yards turned into a cloud of feathers about five feet in diameter when hit with this load. I would like to try this same bullet at maximum velocity from the 300 Magnum. It should be the last word for coyotes.

Two weeks ago I laid aside the heavy match gun and sighted up my Springfield model 22 Sporter for the Remington 220-gr. hollow-point express load. Sighted rifle for two hundred yards. I found these bullets to expand very quickly but to hold together well.

My first chance at meat was a big four-year-old black-tail doe at around one hundred yards offhand. Bullet struck just behind right shoulder and lodged under skin on opposite side. It shattered spine but did not spoil any appreciable amount of stew and did not go through the deer.

All my life I've watched black stumps to see if some day one of them would move. I spotted two small black stumps on the opposite mountain, there were two gulches and a small ridge between us and said stumps, which were at least 300 yards.

It was nearly dusk and my partner stopped for a rest, while I watched the stumps. Soon one of them started up the mountain and I knew they were bear. I handed Bill his rifle, then held the gold bead on my Sporter just over the top of upper bear's back and eased one off. Could plainly hear the 220-gr. slug strike and the cub rolled down the mountain about one hundred yards dead. My next shot broke second cub's back with same hold. It rolled under a log and after hitting it again through lower part of hams and cutting one front paw off, it rolled out in the open. My next shot went over, then I hit the little fellow center in stomach emerging at back. It still rolled and crawled down the hill until my pard hit its head. All shots on the cubs passed through, tearing from one to two-inch holes. These black cubs proved some of the best and most toothsome meat I've ever killed, quite similar to pork, but sweeter and very much better.

I believe this load ideal for deer and small bear, but believe it expands too quickly for elk or heavy bear or moose. For these latter the full-patched, delayed upset 220-gr. should be the best bet in a .30 caliber, but then, the Springfield is too small for them to my notion.

An Old-Time Sniper

By W. H. Richard

ONE hundred twelve years ago this summer, our Uncle Samuel, then a youngster afflicted with growing pains, was having an argument with England, historically known as the War of 1812, but what really amounted to a continuation of the Revolutionary struggle and determined whether or not Sammy was to be able to walk alone without being continually bossed and spanked by the former parent country.

The warfare argument of that day had about the same end in view as the present one, to kill the other fellows in as large quantities and as expeditiously as possible. However the methods in vogue were somewhat different from now and seem a bit crude in these days of gas, machine guns, air and submarine craft, long-range rifles, artillery, etc. It was the period of smooth-bore cannon and muskets of the regular or professional soldier, interspersed with the long black flintlock rifle of the pioneer settler turned soldier overnight. The actual firing range for the artillery usually was not much over five hundred yards, desirably closer if the guns could be properly protected from sudden rushes from the enemy. The rifleman had the call on the smooth-bore musket both for accuracy and range, but even he preferred to pot his adversary at not more than a hundred and fifty yards at most, and considered himself at home against the British regular, unless, as sometimes happened, the latter came in too numerous and too fast with his "Brown Bess" with the long bayonet attached, in which case it was apt to be a different story. There were, however, exceptions and stunts in that day as well as in ours, and it is one of these exceptions, as Harry Lauder says, that we are going to tell you about.

That section of the country from Ft. Wayne at the headwaters of the Maumee River, down that river to its mouth at Maumee Bay, now the site of the city of Toledo, and on up to the frontier outpost at Detroit, was the scene of stirring and momentous times. Hull, after a laborious march with his army, cutting its way through the dense woods of Northwestern Ohio, managed to reach his destination at Detroit in time to surrender his force to the British without a fight. A second expedition under General Winchester was badly defeated at the River Raisin, and affairs looked decidedly down in the mouth for the Americans.

As a last attempt to retrieve the fallen fortunes of the day, a third army under General Harrison came down the Maumee from Ft. Wayne and built a fortification on the east bank of the river, naming same after Meigs, then governor of Ohio.

Ft. Meigs was a stronghold typical of the day. Erected on high, level ground and comprised of earthworks surmounted by palisades and blockhouses from which to repel trouble, it was barely inclosed and far from completed when trouble arrived from Detroit in the shape of a large force of British and Indians under command of General Proctor and the celebrated chieftain, Tecumseh.

Proctor, under cover of night, promptly erected two batteries of artillery where he considered they would do the most good, or harm, according to the viewpoint of those most interested, and proceeded to go to work on the fort. When it is noted that the farthest of these batteries was less than five hundred yards and the other only two hundred and fifty yards from the fortifications, the latter being as large as a city block as a target, there is little likelihood that much of the old iron heaved over by the guns of either battery went very far astray. Many of the bombs failed to explode, and buried themselves in the soft dirt of the fort. The Americans, a bit short of the same kind of material, promptly dug up these duds and sent 'em back at their former donors in the original package. It is recorded that General Harrison issued an order giving a gill of whiskey to each soldier who produced a cannon ball that could be used over, and that more than one thousand gills of perfectly good liquor was issued for balls turned in. What a willing bunch of volunteers the General could get today. Why, we know a chap or two who would volunteer to swim the river and deliver the original supply, huh?

Meanwhile Tecumseh's Indians invested the fort on all sides but could do little except to keep the defenders on edge between times dodging the cannon balls. The front facing the river could be very well protected from fire from either flank by watching riflemen along the walls or from the blockhouses at the corners of the stockade, which was extremely fortunate for the reason that the siege was on before the defenders had had time to dig a sufficient number of wells for water supply, consequently had to depend upon the river. It was on this front that the incident occurred that will be of interest to our present-day crop of long-range rifle shooters.

Both banks of the river, above and below the fort, were heavily wooded, as was indeed the whole country for miles in every direction, but from the fort to the water's edge there extended open lowland for about one hundred yards. Protected by rifles from within the fort, water carriers at this point could go and come in comparative safety. There was, however, one small fly in the ointment.

Across the river from the fort on high ground stood an elm tree to one side and farther distant from the fort than the British battery located on that side of the river. It was up this tree that an Indian marksman climbed to a fork or crotch where he could look over into the fort and observe the water parties coming down to the river. From this vantage point he proceeded to have a whale of a time pestering the water carriers as they waded out for a supply.

The smoke from the warrior's rifle could plainly be seen from the fort, revealing his position in the tree, but the range was considered too great for an effective reply. For two or three days he had things all his own way in the game. The sharpshooter appeared to improve with practice, and after two soldiers had been seriously wounded, the thing ceased to be funny to those compelled to be the butt of the joke.

Among the Kentucky riflemen in the fort there happened to be a lanky chap whose name might well have been Winder, Casey, McBride, or perhaps an ancestor of one or more of our long-shooting Marines. Who knows? But at any rate his name was Kirk, and he had ideas of his own about the pest in the tree across the river having all the fun. Kirk begged permission to try his hand on the Indian, but as the officers considered the range too great and since the precious supply of powder and ball was running low, he was refused permission until the third man had been hit, then he was told to have a try.

Finding a suitable rest for his rifle, Kirk figured his trajectory, made his allowances for wind drift, and patiently waited for the smoke from the discharge of the rifle in the tree. When this came, the Kentuckian sparked his flint and the fifty to the pound round ball was on its way.

Results were at once noticeable to the eager watchers in the fort. First, a long rifle was seen to fall from the tree, followed a moment later by the sprawling body of what had been undoubtedly the finest marksman of the British and Indian force. Kirk's lucky shot at least ended the sniping from that point.

As the wooded country about the old fortification gave way to the settler's ax, and fine farmhouses came into being, each succeeding generation has added its bit to the change in the topography. The village of Maumee stands on the site where Col. Dudley and his 800 brave but undisciplined Kentuckians were practically annihilated. Up and down the river its banks are dotted with the cottages of the summer resident. Until recently the locally famous old elm where the Indian conducted his target practice withstood the storms, and, by its story was protected from the more destructive designs of man.

The writer, as a small boy, listened with awe to the tales of the siege of Ft. Meigs, especially the oft-repeated and varied tale of the shooting of the Indian across the river, the distance always changing with the imagination and environment of the relator, but usually from one-half to more than one mile.

As young men we had sat on the old earthwork, still in a fair state of preservation, where Kirk figured his range and gazed at the old tree. With our *(Concluded on page 20)*

Notes on the Cleaning of Firearms

By Major J. S. Hatcher

THE proper cleaning of firearms is really a very serious consideration. More guns are ruined from corrosion and pitting than are worn out in any other way, and the figures on the loss of guns ruined by improper cleaning, if known, would doubtless be staggering.

The United States Marine Corps, whose team has won the International Matches seven times in the last nine years, and which has the reputation of being a corps of riflemen, has just issued a Circular Letter, No. 40, dated October 27, 1925, containing instructions in the care of rifles and the disposition of damaged ones. This letter shows that an excessive number of rifles are being placed before the Surveying Officer. "One organization has surveyed rifles amounting to over 55 per cent of its authorized strength," and "this enormous waste is believed to be primarily due to neglect in cleaning."

These figures appear startling, but it is believed that the loss mentioned is no more excessive than that in any other group of gun users, either civil or military, if actual figures could be obtained. Many civilians continue to use rifles whose accuracy has been so impaired by neglect that in the military service they would be condemned as unfit.

Owing to the immense importance of the subject of cleaning rifles, it is perhaps to be expected that a very large amount of material on this subject should appear in the sporting magazines and other periodicals devoted to rifle shooting. It is unfortunate, however, that much of this material is so confusing that the average gun user is far from having a clear idea in his mind of the proper method of preventing his gun from being ruined by rust.

No man should shoot unless he knows the fundamentals of how to care for his guns. These fundamentals are clear and easy to understand, if we get down to basic facts and away from the usual rifle range gossip handed out by every Tom, Dick or Harry who happens to combine a little rifle shooting knowledge with a large fondness for airing his views.

There is nothing mysterious about the proper way of caring for guns, or the causes for corrosion, and while there was a time, quite recently too, when these causes were not generally recognized, that time is now past, and there is complete information on the subject available for those who care to dig it out.

Every one knows that if a gun is fired and then not cleaned, it will eventually rust. Another characteristic that is much spoken of is what is called "after-corrosion." This term refers to the fact that after a gun is cleaned and set aside, it will again rust. It might be well to go into past history a little and review the old theories on the causes of corrosion and after-corrosion. The most prominent of the old theories will be treated briefly under the following heading:

Corrosive Powder Residues

This theory generally attributed the corrosion of firearms to acid residue left by the combustion of nitro-powder, or to acid residue left by the primer combustion. This theory finds support in the writings or patent applications by Guttman, Beck, Wilde, Klever, Braun and others.

The Ordnance Department at one time said, "Powder fouling, because of its acid reaction, is highly corrosive." This theory followed the advent of Smokeless Powder, and after the theory came a host of so-called *nitro*-powder solvents, which were supposed to dissolve the residue of nitro-powder. Most of these solvents are built on a base of amyl acetate or banana oil. Smokeless powder in burning, deposits a gummy substance in the bore, and acetone, or amyl acetate, will dissolve such substances.

Powder-Gas Occlusion Theory.

This theory was evolved to account for after-corrosion. It is called the "Sweating-Out" theory, and is perhaps the most generally accepted of all. According to this theory the powder gases from the nitro-powders were acid in reaction and were driven by pressure into the pores of the metal while the barrel was heated. On cooling, these acid gases slowly diffused, and on coming into contact with the air, caused corrosion, which would sometimes continue over quite long periods of time, in spite of, and following numerous cleanings. The advocates of this theory supposed that the combustion of nitro-powder must produce oxides of nitrogen.

The theory was apparently borne out by the experience of many riflemen, in having after-corrosion developed after apparently careful cleaning. Many riflemen today still firmly believe in this theory, and find support in the writings of Ommundsen and Robinson, Pauling, Marshall and Pasdach.

Electrochemical Theory

It is well known that when two dissimilar metals touch, there is a difference of electrical potential between them, and that if any chemical solution comes in contact with them, a current of electricity will flow, and the metal which is the more negative of the two will be corroded. This theory as discussed by Huff, considered that the metal fouling left by a bullet would form an electrical couple with the iron of the barrel, and the resulting electrolysis in the presence of moisture would corrode the iron.

No evidence has ever been produced to sustain the fact that this action takes place in rifle barrels, however, and it can be dismissed, particularly in view of the findings which will be given below:

Metal Fouling

It was also supposed by many people that acid residue, or other corroding agents, might be imprisoned under metal fouling and where ordinary cleaning could not reach it, and that after a gun was cleaned and put away, the acid would work itself out and thus account for after-corrosion.

Old Methods of Cleaning

With these theories in mind, the former methods of cleaning were either to use a nitro-powder solvent of some kind, with the idea of removing the supposed acid powder residue, or of using a metal fouling dope with the hope of removing the metal fouling under which it was believed that corrosive agents were imprisoned.

The general result of cleaning with the powder solvents was that guns would apparently keep well for a while, but were subject to apparently unaccountable attacks of after-corrosion. The reason for this can be well understood by what follows:

The result of cleaning with metal fouling dope, when properly done, afforded complete protection, but was subject to serious disadvantages. This metal fouling dope is an ammonia solution which will dissolve copper compounds, and will therefore take out cupro-nickel fouling from a rifle barrel. However, it has the disadvantage of being very corrosive to steel if left on the metal in contact with the air.

In using this dope the breech of the gun was corked up and a rubber tube was slipped over the muzzle. The barrel was then filled with the solution and allowed to stand for about twenty minutes. In using the solution it was necessary to fill the rubber tube clear above the level of the barrel, because if the solution were allowed to stand only part way up into the barrel, it would attack the barrel at the point where it came in contact with the air, and ruin it.

If the solution leaked past the cork and ran into the breech mechanism, it was liable to remain there and cause serious rusting. The ammonia dope had to be mixed up fresh, as stale dope was corrosive to rifle barrels.

In spite of all precautions, sometimes ammonia dope unaccountably attacks the steel of a rifle barrel and ruins it in a few minutes, giving the barrel a gray appearance and rough surface inside, as though it had been sandblasted.

The Ordnance Department formula for ammonia dope is:

Ammonium persulphate	1 ounce
Ammonium carbonate	200 grains
Ammonium hydroxide (28%)	6 ounces
Water	4 ounces

The use of this material is gradually falling into disuse, owing to the adoption by the Ordnance Department of a bullet which does not give metal fouling. The reason for its suc-

cess in preventing corrosion will be plain when the succeeding paragraphs have been read.

New Theory on Research Work by the Bureau of Mines

All people do not hold to these old theories, as some knew or guessed the real cause years ago. Thus we find Zeighler, in 1900, applying for a patent on primer composition to eliminate potassium chloride, which he claimed was the cause of corrosion. However, the first real light that came to the public at large on this subject was when the Bureau of Mines, a branch of the government eminently fitted to conduct an investigation on explosives, was asked in 1918 to investigate the cause of after-corrosion in firearms, and the work was assigned to Dr. W. J. Huff, of the Bureau's research staff. The results were published in 1922 in the Bureau's pamphlet, Technical Papers 188.

This is perhaps the most complete and convincing report ever made on this subject, and once and for all upsets the numerous old theories on corrosion in firearms; fixing unquestionably the real cause, and bringing the remedy to the understanding and reach of all gun users. This report is freely quoted by many Government publications dealing with care of ordnance and forms a basis for their instructions.

This article frequently refers to the Bureau of Mines' report as the source of technical information, in places almost taking their data word for word, and it is desired to take this opportunity to acknowledge the debt all shooters owe Dr. Huff for his painstaking research and splendid report.

It would not be desirable in the length of this article to go completely into the experiments made by the Bureau or how their conclusions were reached. Those who desire this data can obtain the report "Corrosion under Oil Films, with Special Reference to the Cause and Prevention of After-Corrosion of Firearms" by Wilbert J. Huff—Technical Papers 188,—from the Government Printing Office at Washington for five cents.

It would be well, though, to give some of the experiments and conclusions together with a few suggestions as to how these can be converted to practical use in everyday cleaning methods, the avowed intention of this article being to take the Bunk out of cleaning and to this end a complete understanding of the subject is necessary.

Influence of Humidity

Among other experiments, Dr. Huff placed fired rifles in humidors at different degrees of atmospheric humidity. It was found that a humidity of less than approximately fifty per cent (50%), did not develop corrosion in fouled rifle barrels, even after exposure for a number of days. The two rifles used in this experiment were then exposed to one hundred per cent (100%) humidity, and the bores immediately developed heavy corrosion; all other metal parts remaining bright.

Carrying out this test further, sections of a barrel which had been fired were exposed at various humidities at a temperature of 30° C, and corrosion occurred at from 68% to 76% humidity.

Bullet Jacket Material Fouling

Bullets were driven by hand through unfired barrels, and cupro-nickel filings were thrown into the bores which were then exposed to 100% humidity with no resultant corrosion. Evidently, then, metal fouling is inert and will not cause corrosion.

Acid Gas Diffusion

Fired rifles were induced to corrode at 100% humidity, the bores being wiped out daily until corrosion ceased. This process lasted five days, showing that if gases were diffusing, the diffusion was completed in that time under the conditions in which the rifles were kept. Other rifles were fired and kept under the same conditions, but in less than 50% humidity, and did not corrode. If gases do diffuse and this diffusion was complete in the first case in five days, it is reasonable to suppose that it was complete in the second lot of rifles in the same time. After ten days, the second lot of rifles were exposed to 100% humidity and immediately corroded.

If corrosion was the result of gases, it might reasonably be expected to occur over the whole of the bore surface. Sections of a corroded barrel do not show this to be the case, but clearly show that corrosion occurs in patches which are surrounded by clean sections of metal.

The production of corrosive acid gases by the burning of nitrocellulose powders under high pressure is not indicated by chemical examination. Carbon dioxide is produced but has little or no effect in corroding steel. Hydrogen and carbon monoxide are also formed, but when cooled from the great temperature of the explosion, 3900° F, the presence of oxides of nitrogen is impossible.

In the same way, it can be shown that the formation of nitrogen oxides from the primer are impossible, while it can be clearly demonstrated that the potassium chlorate of the primer loses oxygen and gives chloride, the salt.

Other examples can be brought to disprove the gas diffusion theory but are merely an accumulation of evidence that corrosion is not formed from this cause. There remains the possibility that some surface residue from the powder or primer may form an acid in accord with the first theory given.

Experiments were conducted along this line, and no trace of acid could be found. The presence of acids or acid gases then from powder or primer, when burned under pressure, must be disbelieved.

It can be shown, however, that some powders burned under little or no pressure, such as in reduced loads or blanks may produce acid residue, due to incomplete combustion; but inasmuch as after-corrosion is present when no acid is formed, this can have no effect on the primary cause of this corrosion, which it can readily be seen is primer salt.

Potassium Chloride Theory

One of the ingredients of all modern primers is potassium chlorate, and when the primer is fired a certain amount of potassium chloride is formed. Potassium chloride is a salt very much of the same general chemical formula and behavior as the common table salt, sodium chloride. Potassium chloride attracts moisture.

It is well known by every one that wet salt placed on a metal surface will immediately cause rust. From a consideration of these facts, Dr. Huff conceived the idea that it might be the potassium chloride that was causing all the trouble. To test out this theory he made up a priming mixture of silver permanganate, lead sulphocyanide, antimony sulphide and T. N. T., and loaded some service cartridges with these primers.

Two lots of guns were first carefully made chemically clean, and then fouled by firing; one lot with the cartridges primed with the above mixture, and the other lot with a straight service cartridge and primer. The bores were coated with oil and exposed in a humidor to 100% humidity for one week. The specially primed rifles did not corrode, while those fired with the service cartridge corroded heavily under the oil.

This was indeed a great ray of light on this hitherto dark subject. It not only demonstrated the truth of Dr. Huff's potassium chloride theory, but it further showed that oil alone is not capable of preventing after-corrosion by excluding air and oxygen from the salt.

A further experiment consisted of the application of chemically pure potassium chloride to sections of a barrel which had never been fired. When exposed to 100% humidity, these gave identically the same results as the fired rifle barrels.

Adherents of the old theories may object that repeated cleanings should mechanically remove the salt; that the many endorsements of non-aqueous nitro solvents can not all be in error; that after-corrosion in dry arid regions like Arizona are not explained, and similar doubts.

These objections are not at variance with the facts as found by the Bureau of Mines. Repeated cleanings may not remove every particle of salt. Microscopic examination of a barrel shows very plainly the deep tool wounds and fissures of its surface. Corrosion results in further deepening these pits or scars. When potassium chloride is deposited over the bore surfaces, it gets into these tool wounds and scars, and no amount of mechanical cleaning can insure its entire removal.

It is also a fact that while desert regions are dry in the daytime, nightfall is accompanied by a rapid cooling of the atmosphere which is frequently great enough to precipitate dew. Reports from the Weather Bureau Stations in the arid areas of Arizona, Utah and Nevada are to the effect that all these stations had observed the formation of dew.

The gas diffusion theory or "Sweating Out" is now shown up in its true colors. We have seen that humidities of over 50% are neces-

sary to induce corrosion. After firing and mechanical cleaning and oiling, some period of time may elapse before this humidity point is encountered, and this is particularly true where guns are kept indoors and in artificially heated atmospheres. Part of the salt has probably been removed in cleaning and the remainder rubbed into the cracks and fissures of the bore surface, where it lurks, a dangerous and invisible enemy. It may thus remain inactive until a relatively high humidity is again encountered, when corrosion sets in. This may be weeks or months after firing, and formerly, when it appeared, its presence was hard to understand, and most naturally attributed to "sweating out" of gases or acid-powder residue.

It is also true that a long period of high humidity might develop the maximum corrosion in a short time. The experiments cited show that at 100% humidity, the maximum corrosion can take place in five days, subsequent cleanings showing no further corrosion took place. In other words, the potassium chloride had been completely dissolved in that time by the water vapor. This period of five days is of course not constant but depends on varying conditions. It does show though, that a barrel may corrode or "sweat out" on several different occasions or the corrosion be completed at once or over a single period; and that the mechanical removal of the salt is not the sole means of stopping it. It may go on until the last of the salt is dissolved, where it stops itself for lack of fuel as it were. A gun cleaned at this stage would not evidence any further corrosion.

This potassium chloride, being almost the same as ordinary salt, can easily be dissolved in water and washed away where it will do no harm, whereas oil will not dissolve it and will have no effect on it.

The fact that metal fouling might imprison some of the so-called acid fouling has long been recognized, and this is equally true of primer salt. Many people cleaned with ammonia dope to remove metal fouling on the theory that then the barrel could be properly cleaned of the acid residues. This method gave excellent results and was in vogue for a long time, gradually falling into disuse, owing to the danger of using ammonia dope and to the decrease in metal fouling obtained from better bullet jacket material.

It is conceivable that any insoluble fouling might clog up the entrances to the cracks and fissures of the bore surface in such a way as to prevent or delay the dissolving of the chloride contained therein by a suitable aqueous solution. Even if cleaned then with aqueous agents, corrosion might develop, but this has to do more with the care and thoroughness used in cleaning than in the methods involved. Certainly all insoluble fouling should be removed, including metal fouling to prevent this possibility.

We know that liquid films or water vapor are necessary to cause potassium chloride to develop corrosion. Oxygen also is a very necessary factor, as chloride will not corrode steel in its absence.

As the atmospheric conditions with regard to the humidity necessary for potassium chloride to corrode are encountered before the dew point at which clean steel rusts is reached, after-corrosion is more rapid than the normal atmospheric corrosion of steel. For this reason the bore was the hardest to keep clean. On the other hand, if the bore of a gun is properly cleaned and free of salt, it will not corrode any faster than any of the bright external parts. In fact, there is really less danger to the bore than to the outside, as the latter is liable to be handled, leaving finger prints, salty from the body sweat, which then induce corrosion.

Granted the primer is responsible for all the damage, it should be changed to one which is harmless. From the shooter's standpoint, this would certainly seem to be the simplest remedy, and yet no one has been able to do it. The universal use of primers containing potassium chlorate has persisted many years in spite of much study and investigation. True, other primers have been produced, but they have not stood the test of time or met the fundamental primer requirements of being sensitive to percussion, stability under long storage conditions and extreme variations of temperature and moisture, and of developing high energy.

As we must fire the ammunition as we find it, the only safe thing to do is to learn how to clean guns after firing so they will not be ruined.

In all this consideration of the problem of after-corrosion, the rifle has been taken as a means of determining cause. In general, the same rules hold true for the shotgun and pistol or revolver. The latter follow the rifle closely, while the shotgun is easier to clean. The same rules, however, apply to the shotgun as to the rifle, and if a satisfactory method for cleaning rifles is adopted, it will be safe for use on shotguns.

A Few Facts to Keep in Mind

Chemically clean steel lightly oiled will not rust until the dew point is reached.

Oil will not prevent moisture and oxygen from being absorbed by potassium chloride and causing corrosion under the oil film.

Grease may retard this process but will not prevent it. Some oils and greases have combined with them rust-inhibiting chemicals which will absorb moisture, or the dissolved potassium chloride, and so prevent or retard corrosion for a time. These are dangerous as cleaners, as the salt in solution is still present, and may be redeposited on the bore, or there may be an excess of salt present over the amount which can chemically be taken up by the inhibitors in the grease or oil.

Nitro-powders burned under pressure do not give acid gas or acid residues and are harmless.

These same powders burned under little or no pressure, as in blank cartridges, do sometimes probably leave acid residue, owing to incomplete combustion of the nitrocellulose. It is conceivable that with unscientific hand loading of cartridges by amateurs, this condition may obtain.

Metal fouling and leading are in themselves inert and harmless, but being insoluble in aqueous solutions best adapted for cleaning, should be removed to obviate the possibility of their preventing the solvent's dissolving the potassium chloride.

The modern copper-jacketed bullet will not foul to the extent of destroying accuracy, but will leave a copper wash or plating which sometimes prevents or retards the solvent action of cleaning solutions on the potassium chloride.

Guns handled with bare hands show the same tendency to corrode as do barrels containing potassium chloride and should be treated accordingly. Perspiration is salty.

From the experience of gun users, it would appear that rifles using .22 cal. short smokeless and .25-20 ammunition are the hardest to clean. The shotgun is the easiest. All, however, react to the same laws.

The primers universally used contain potassium chlorate which on explosion becomes potassium chloride or salt, and it is this salt which does the damage.

Corrosion is rust; rust is the eating away of metal, corrosion can be stopped, but the damage done can never be repaired as the metal eaten away is gone. This damage may be slight or great, depending on the amount of unchecked corrosion.

Conclusions

From the investigations cited above, and from accepted data from other sources, it can be said that on being fired the following happens or may happen in any firearm.

The bore is fouled with a varnish-like fouling from the powder, black, dirty, but nothing but powder ash and in itself harmless unless incompletely consumed by the explosion when acid reaction from the unconsumed powder may follow.

The resultant potassium chloride from the combustion of the primer is deposited on the bore surface more quickly at the breech end of the barrel than toward the muzzle. This explains why guns more frequently corrode first toward the chamber end of the barrel. In fact, the quicker wearing away of the metal at the mouth of the chamber is attributed by some authorities more to minute corrosion, often repeated and so small as to be hardly recognized as such, than to the more generally accepted theory of hotter powder gases at this point.

Finally a minute scraping off of the bullet jacket material or lead from the bullet or shot in passage through the bore. This fouling is unavoidable largely by reason of the roughness of the bore surface from tool wounds, cracks, etc. and is worse in barrels which have had their surfaces increased in roughness by permitting them to corrode. This fouling is inert and harmless in itself.

These conclusions must be accepted with the accumulation of evidence in their favor. That they are accepted by the Government is evidenced by the following quoted from Training Regulations No. 320-25 published by the War Department, March 25, 1925, and providing in part for the care and cleaning of the Automatic Rifle (Browning) Model of 1918:

"The firing of a ball cartridge deposits in the bore the products of combustion of the powder and primer, together with plating or smears of metal from the jacket of the bullet. The combustion of the powder, being very complete, usually leaves a fouling which consists of an almost harmless ash. The combustion of the primer mixture, however, results in the deposit of a salt known as potassium chloride, akin to common table salt. This salt is deposited all over the surface of the bore and gas system and in all cracks and tool marks. When first deposited it is harmless, but, like common table salt, it quickly absorbs moisture from the air. Particularly it absorbs moisture as soon as the humidity has increased after nightfall. Steel rusts very quickly when covered with wet salt. This salt, like common table salt, is not dissolved, and is little affected by oil or by any solutions or solvents containing oil, and will continue to absorb moisture even when saturated with oil. It is, however, readily dissolved in water or in solutions containing water, just as table salt may be thus dissolved. The proper method of cleaning is therefore to dissolve all of the salt from the bore, surfaces, cracks, and tool marks with which it comes into contact by using water or solutions containing water, then to dry these parts thoroughly, and finally to protect these parts and surfaces with a film of oil or grease. The above facts should be explained to the soldier, and he should be made to understand that oil or solutions containing oil will not clean the bore or gas system free from fouling; that only water or solutions containing water will do this."

Consideration of Methods

The Bureau of Mines has pointed out, potassium chloride, the primary cause of after-corrosion, is soluble only in water or aqueous solutions. Manifestly then, cleaning with water will dissolve the salt and would seem to be the simplest method. The Bureau of Mines, however, further states that, "Practical riflemen seem to have a deep-seated prejudice against the use of water . . . ." This is undoubtedly true and for very good reasons. Water is dangerous because it must be thoroughly removed or will in itself cause corrosion. Neither oil nor grease will prevent the formation of corrosion under their films by excluding oxygen, and that is all water needs to corrode badly. The difficulty of using water as a cleaning agent is apparent when one considers solid breech action rifles which necessitate cleaning from the muzzle revolvers where the cylinders and mechanism present innumerable cracks and crevices to be completely dried, extractor slots in .22 cal. rifles, etc.

Water can have no effect in removing metal fouling which, as has been pointed out, may clog up the mouths of tool wounds or pits and prevent or delay solvent action on that salt.

Finally, water is not alkaline to neutralize any possible acid residue from incomplete combustion which, while seldom encountered normally, is a possibility.

This would point to the ammonia dope solution already cited as being the ideal cleaning agent, and undoubtedly it does fill the bill, but is a very dangerous cleaning medium and a multitude of guns have been ruined by its use in the hands of inexperienced men. Ammonia dope in a hot barrel will ruin a gun in a very few minutes. Stale dope will do the same thing. Ammonia dope eats out all the metal fouling (cupro-nickel and copper) but unless removed in time and entirely removed will go on eating into the barrel. The best way and the only positive way of removing the dope is to wash it out with water—so here we are just where we started from.

The removal of the lead fouling by mercury with which it amalgamates is a comparatively simple matter and harmless unless one tries to drink the mercury. Most cases of leading will yield to a brisk rubbing with a wire brush. If not, remove all oil or grease from the bore, rough up the lead with a brush, stopper the bore and pour in mercury, working it back and forth for a few minutes, and pour out. The bore must then be cleaned for potassium chloride.

Cleaning with a *good* aqueous solvent or solution is perhaps the best after all, as it is the most foolproof, but the question is to find a good one. Many commercial solvents are advertised, and the Bureau of Mines, which analyzed and tested quite a number, goes on to say in its report:

"The number of failures (of the tested solvents) in the corrosion tests is striking. Many of the mixtures are not only inadequate, but, because of the false sense of security that their use may induce, are even dangerous. If after the use of one such mixture the rifle is maintained at a humidity low enough, no corrosion will result. Therein appears to lie the true explanation for the supposed value of such a mixture and for much of the confusion that surrounds the problem of after-corrosion."

Good, efficient, and foolproof aqueous solvents or cleaners can be procured, however. The Circular Letter of the U. S. Marine Corps above referred to says:

"Potassium chloride is a substance that is absolutely insoluble in oil or grease of any kind, but is readily soluble in water. A commercial solvent has been successfully used by the rifle team for this purpose and is issued by the Quartermaster Department."

The ideal solvent should have the following characteristics:

a—Ability to dissolve potassium chloride. This is a primary requisite and is most important.
b—Ability to neutralize acids by means of an alkali content. Desirable but not so important.
c—Ability to remove metal fouling.
d—To be in itself harmless to the finest mechanisms such as lock actions.

There is a contradiction of requirements in c and d. It has so far been impossible to make a solvent which will positively remove all metal fouling and at the same time be harmless. The best that can be hoped for is to procure a solvent which, while harmless, will have under this restriction an ability to remove metal fouling to some extent. This ability to remove metal fouling can then be assisted by the use of a stiff wire or brass brush. How much of such a solvent's efficiency is due to itself and how much to the brush is problematical. It is a desirable factor, however, and does undoubtedly help. The use of a brush in cleaning is good from other standpoints. It breaks up insoluble powder residues, permitting free solvent action on the potassium chloride and generally makes the act of cleaning easier.

Since all the desired characteristics can not be obtained with 100% efficiency in any one cleaning medium, more than one should be used. To the real gun nuts, this is perfectly feasible, the big difficulty is to teach the average occasional gun user to clean with any efficiency or to use a solvent or cleaning medium at all, other than an oil, which we have seen is useless as a cleaner or as a preservative, unless the bore is chemically clean. Cleaning must be made simple, or it will be disregarded entirely. Most farmer boys, for example, own and use .22 rifles and belong to the occasional gun user class. They seldom clean, or at best, use a rag dipped in the cylinder oil of the Ford. They get after-corrosion and can not imagine why, after a generous dose of this oil. It is this class of users, not the inveterate user or nut, who needs education into the whys and wherefores of cleaning. The nut knows more about it, although the prevalence of after-corrosion in this class even, is appalling.

A proper cleaning which will surely prevent corrosion takes no more time than the cylinder oil method, and it is probable that it is the lack of knowledge of the real causes of after-corrosion—the bunkum generally handed out—that prevents really efficient cleaning from being practiced.

The occasional gun user may ask the question, "How am I to know a good solvent from a bad one? The advertising literature all sounds very alluring." The answer is rather simple. It has been shown that an aqueous solution is necessary to dissolve salt and that this salt is not soluble in oil. Generally speaking, if a solvent was designed to neutralize the acid residues of nitro-powder, its ability to dissolve salt should be questioned. Most solvents on an oil or amyl alcohol or amyl acetate (banana oil) base belong to this class.

The simplest way to find out the value of the cleaning medium selected is to take it to an analytical chemist. Ask him to give you a report on whether or not your selected solvent dissolves potassium chloride and whether or not it contains any ingredients which would be injurious to the fine mechanism of a gun. This would be a few dollars well spent and insures you an efficient material.

For those who have no chemist available, the following is recommended. The Bureau of Mines' report gives:

"A Test for Useful Solvents

"It is often desirable to determine without exposing a valuable firearm to possible corrosion whether a solvent is useful or not. For this purpose a soft steel plate may be brightened with emery paper and rubbed with potassium chloride. The oil or solvent should be used as directed, with special care not to dislodge mechanically the salt from direct contact with the steel. The plate should then be exposed to a saturated humidity for not less than a week. Only those processes that give complete protection should be employed on the bore surfaces of the firearms."

A condition of saturated humidity can be obtained by suspending the metal plate over a pan of water in a cigar humidor or over water in a covered Mason fruit jar. Primers flashed on a steel plate will answer for the potassium chloride. This test is simple, but, personally, I do not like it as well as a chemist's test. I do not feel sure of not having mechanically *(Continued on page 18)*

An Outdoorsman's Handgun

By J. V. K. Wagar

IF THERE is one man whom I envy, in this revolver-shooting world of ours, it is the target shooter. It seems that he, alone, lives in utmost contentment with all that pertains to hobby. The only reason why I don't hate him for this worryless existence is because he is not conceited about his advantages.

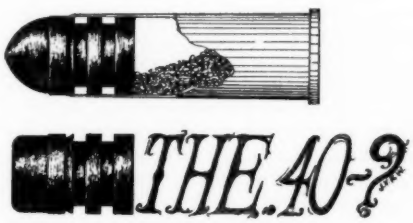
The target shooter can call his own the .22 Long Rifle, the .38 S. & W. Spl., the .44 S. & W. Spl., and the latter's little brother, the .44 Russian. All of them are well trained and are right willing to punch holes into the very center of the 10-ring. Best of all, they are remarkably accurate in factory loads—in almost any factory loads in which they are made.

The .22 L. R. cartridges can not be reloaded—being rim fired—and are so very inexpensive that reloading would not be worth while if powder, lead factory bullets, and priming mixture were given away. The .38 Specials, .44 Russian and .44 Specials can be reloaded, and with such ease, economy, and accuracy that it is strange that the factories can sell anything more than primed empty shells for them. With heavy shells of good brass and straight sides they never require resizing. Perhaps you don't know it but the last big job his enemies wished onto Hercules was a big bunch of bottle-necked revolver shells to resize. Before that he'd relieved Atlas of his job, helped an irresistible force knock the only existing immovable body clean out of the universe, and had done a lot of other little chores. But, when they told him to resize those shells, he just curled up and died.

If the target shooter is too lazy to reload the larger cartridges, and is too impecunious to buy them, he can shoot the .22 L. R. It will kill a target just as dead as a .44 Special will, excepting, perhaps, when a larger caliber will sneak over into the next highest ring. But, if he cares to use the .44 loads, he doesn't worry about spoiling any more meat than with the .22. If he's a reloader, he can shoot at a backstop and then sneak down to the butts and get back not only his own lead but that which his fellow club members hope to get later. Trajectory means little or nothing to him because he usually shoots at 12, 20, or 50 yards, for which he can set the movable sights, which most target shooters effect, for any distance he desires.

Then, if you will, compare shooting targets and shooting rabbits. The rabbit shooter pays for his hunting license and sometimes goes all day without ever seeing a rabbit. Even if he sees a rabbit, he might miss it with the first shot, after which the rabbit leaves the country. But the target shooter buys his game by the bale, puts them in clamps which hold them until he can hit them—a remarkable saving, since a target will often remain alive after a whole box of cartridges are shot at it—and can always take a whole armful of dead targets home to show to the wife, telling her how he put it over the rest of the boys at the club. Just everything seems in his favor.

The target shooter is, in fine, so well equipped that he has nothing to worry him. The military has experts who can determine all of its revolver and pistol needs, arsenals to produce the concrete expressions of such needs, and experimental men, machinery, and actual service to prove the fitness of the final products. The military is self-sufficient. The householder needs a light and reliable arm, of limited power, which both he and his wife can shoot. Trajectory, maximum killing power, and extended accuracy mean little more to him than Pythagoreanism does to the average child of four years. The experimental shooter



usually has such skill that he can adapt most standard cartridges to his own needs, or to his ideas concerning his needs.

The outdoorsman, however, has needs which have never been met in any one revolver cartridge. The .38 S. & W. and Colt Spls. are, after all, only .36 caliber and lack the bullet area needed for the quick and humane killing of even such small, although tough, animals as the porcupine and badger. The .44 Russian and Specials and the .45 Colt are too sluggish and possess too steep trajectories for fine shooting at any medium or long range. The .38-40 and .44-40 lack the fine accuracy needed for killing small animals without spoiling the better parts of the meat and are loaded in bottle-necked shells, which are miserable things to reload. All of these cartridges lack the penetration needed for killing any heavy game which one might meet in an emergency.

The outdoorsmen who use revolvers are in need of a better cartridge, and, with our modern smokeless revolver powders, such a cartridge is now possible. Had these rather dense powders been made at the time when the .32-20, .38-40 and .44-40 were designed, these famous cartridges could have been given their standard velocities, although made with straight shells of the same length. This would have been a wonderful improvement over their existing forms. The .38-40, .44-40, and .45 Colt are now our best revolver cartridges for the outdoorsman, even though they are not as perfect as they could be for such uses. Absolute perfection is impossible but it is possible to design and make a cartridge which would come much nearer to meeting the needs of the outdoorsman. Let us now consider the qualities which the outdoorsman's ideal revolver should possess.

The outdoorsman's ideal revolver cartridge must have an accuracy unsurpassed by that of any other revolver cartridge. A cartridge of less accuracy compels the hunter to place his trust in luck rather than in skilful shooting. Small game must be struck in the head, in the ribs, in the viscera, or in other parts scant of meat, in order to avoid meat-spoiling; coyotes and similar animals of medium size and great vitality must be struck in certain vital centers to avoid crippling and losing an animal; for their own safety, hunters dare not shoot dangerous game in any but effective regions of the body; and any small or medium-sized game shot at a distance will require the very finest accuracy.

Black powder is thoroughly unworthy of consideration for the ideal cartridge, although it is an advantage to have sufficient powder space in a cartridge to allow effective reloading with black powder if no others are obtainable. Black powder so readily chokes the bore that one has, in reality, only an irregular shaped smooth-bore barrel, with barely noticeable rifling, until such fouling can be removed. Only the most modern, most uniformly burning, cleanest shooting powder will give the finest accuracy, greatest velocity with moderate pressures, and the most prolonged revolver life. Nitroglycerin powders have the advantage of great stability but they are much more harmful than nitrocellulose powders to the barrels of any revolvers shooting as powerful a load as the outdoorsman's ideal cartridge should be. I have several revolvers with the rear ends of the barrels eroded by such powders. The ideal powder for this cartridge would be a nitrocellulose powder of good stability, of greater density than black powder and similar true bulk powders, but of sufficient bulk so that the standard powerful load can be safely measured with a carefully made, thin metal measuring cup. Many men are deterred from the pleasures and advantages of reloading because of that expensive and aggravating nuisance known as powder scales.

The bullet for this new cartridge should not be metal-jacketed. Such bullets add too much to the cost of factory-loaded cartridges and are usually too expensive, if not unobtainable, for the reloader. Automatic pistol bullets need metal jacketing to prevent the deformation which is likely to occur when the cartridges are fed into the chamber. Only metal-jacketed bullets can withstand the heat and stresses of high-power rifle loads, and any bullet with a weak or short bearing is rendered more accurate by a jacket of tough metal. But revolver and low-velocity rifle bullets are not subjected to heats and stresses of sufficient intensity to distort them and, by

proper design, they can be given such effective barrel bearing that they are equal to metal-jacketed bullets in accuracy, and with little loss in wind-splitting ability.

In automatic pistols, repeating rifles, and single shot rifles which are not especially throated, it is not possible to use fixed ammunition loaded with bullets having strong, wide bands of groove diameter ahead of the shell. In revolvers, in which the entire cartridge is held in a cylinder entirely free of the barrel, it is possible to use such a bullet. In rifles and pistols, in which the bullet takes the rifling before it has a chance to tip, such a band is not necessary unless the bullet is poorly balanced or designed. In revolvers, however, in which a bullet must travel a short distance before striking the lands of the barrel, the bullet has a chance to tip unless it is steadied as far forward as possible by a strong, wide band of groove diameter. Belding & Mull have realized this and have incorporated such ideas in their new revolver bullet molds, and with wonderfully satisfactory results. Not only should there be such a band, but at least a portion of the bullet ahead of that band should ride firmly on the tops of the lands, serving as an additional aid in holding the bullet to the axis of the barrel.

I have drafted two bullets according to these principles. The first of these is sufficiently sharp of point to obviate any serious reduction in velocity because of air resistance, and could be used on small game without too serious tearing of meat. This bullet would also have the best penetration, which, combined with its good diameter, would make this a most effective revolver load for use in emergencies on large game, especially when made of hard, lead alloy to prevent too great expansion. The second is made with a wide flat point which would give considerable shock upon impact, and which, when made of pure lead or of a rather soft alloy, would expand quite readily. Both of these are designed with that portion of the bullet ahead of the front band large enough in diameter to ride upon the lands. The front band is wide and strong and is located as far ahead of the bullet as will permit of the good point of the first bullet. The rear band is wide and sufficiently strong to withstand the impact of the powder gases without deformation. It is made with sharp corners to secure the most certain accuracy.

The outdoorsman's ideal revolver cartridge should have a minimum velocity of 1,000 feet per second, or even higher if possible within the limits imposed by the strength of revolvers and of men. This velocity is easily reached in the .36 caliber revolvers, such as the .38 S. & W. Spl., but the bullet would still be too small in diameter for the outdoorsman's usage. The .44 S. & W. Spl. and the .45 Colt might be given such velocities but only by lightening their bullets even more than the .45 Colt Auto. bullets are now lightened. Even then the pressures might prove too great for the very thin walls outside their chambers. And light bullets are very well for military uses, where no heavy bones or tissue or other obstructions are met with, but for side arms for the outdoorsman a bullet of the highest possible sectional density is needed. Somewhere between .390 and .400 inches seems to be the best caliber for the ideal revolver cartridge. At this point good bullet weight, sufficient bullet cross-sectional area, moderate pressures, thick cylinder walls, and a really efficient velocity seem able to combine their good qualities.

The cartridge cases should, of course, be made of sufficiently heavy brass to withstand much shooting, and with very straight sides very nearly parallel, with just enough taper to allow easy extraction. These shells should be lightly crimped just back of the forward bands of the bullet, preventing the bullets from being pushed down into the shells. Reloading tools made for these cartridges should be made so that too heavy a crimp, which sometimes proves dangerous with powerful revolver loads, could not be formed, and so that the cases would be sized down to fit the bullets snugly.

I believe that the best primer for this new cartridge would be the small-sized rifle primer of sufficient softness so that it could be fired by the light hammers of double action revolvers. Large-sized primers are not needed with the moderate-sized powder chamber of this cartridge. To use rifle, smokeless powder primers in very heavy charges meant to be fired with pistol, smokeless powder primers is dangerous, and some accidents might be prevented with the recommended powder charges adapted to the use of rifle primers. Pistol primers can seldom be bought in out-of-the-way places but small rifle primers are easily found.

This cartridge would give over 400 foot pounds of energy, which is considerably higher than the energy of any cartridge of equal bullet diameter, and would have a penetration equal to that of the .38 Colt Automatic pistol cartridge. Its recoil should not be noticeably heavier than that of the .38-40 with smokeless powder loads, which is not at all bothersome to the average outdoorsman. According to ordinary standards, this cartridge might kick a little and, I suppose, a great army of revolver shooters would want lighter loads for it, so they could shoot the latest thing out without getting hurt; but for them there are the .38 Spl., the .32-20—yes, practically all of our revolver cartridges, save the .38-40, .44-40, and, in some loads, the .45 Colt. "Blessed are the meek for they shall inherit the earth." That is agreeable—perfectly so—but let's keep a few cartridges for ourselves.

There are three splendid revolvers which could handle this new .40 caliber cartridge; the Colt New Service, the Colt Single Action Army, and the Smith & Wesson Military revolvers. The cylinders of each of these are large enough so that a very thick and strong cylinder wall would surround each chamber, and the actions of these world-famous revolvers are more than amply strong to handle such charges. The slightly additional weight of their cylinders in the .40 caliber cartridge would do much to modify the recoil of this heavy charge.

A new revolver cartridge similar to the one I have drafted is really the only opportunity of the revolver to become as thoroughly modernized as the rifle and to really utilize the benefits of the latest and best revolver smokeless powders. Revolvers for such a cartridge could be made of the very best material and there would be no existing revolvers of old and inferior metal which could be burst by the use of such powerful charges. There would be no existing revolvers or cartridges demanding a compromise in chambering and in barrel making. The revolvers and the new cartridge could be worked out together and for each other, and no previous erroneous practices would have to be followed.

According to our present rather complete knowledge of revolver making, the groove diameter of the barrel and the diameter of the bullet should be identically the same. The throats of the cylinders should be as nearly the same diameter as the groove diameter of the barrels which will allow the cartridge, with its heavy band ahead of the shell, to be pushed into its chamber without too much exertion. This means practically no difference if the bullets are accurately shaped. The tapering cones at the rear of the barrels should be made as small as any possible loosening of these three revolvers, which is small indeed, will permit.

To the target shooter and military man this may sound like the aimless dreaming of idle hours. To the outdoorsmen who carry revolvers, and there are many of such in the mountains of the West and in other regions, this is a long-needed cartridge. Since I first found that only such a cartridge could satisfy my revolver needs, which was several years ago, I have talked with and written to many others concerning it and find that very many others have had the same ideas; some of them long before I ever did any real wilderness work. There would be a great crowd of us who would buy such revolvers, even if we had to sell one of the saddles or the spare tire, eat jack-rabbit most of the winter instead of smoked ham after the venison runs, or give up the use of condensed milk in our coffee. We don't give a whoop if the cartridge wears the Colt or Smith & Wesson brand or both, like the .38 Specials, but we would like to see one of these outfits produce revolvers for this .40 caliber cartridge. And we'd like to see all three of the revolvers I have mentioned made for this cartridge, for some of us have preferences for one of them and some of us for another.

A Man Size Pistol

By Hans Roedder

Title cut shows Pickert pistol in the hammer type with 10-inch barrel, while illustration below shows the special target model having double set triggers, inclosed hammer and long barrel.

IN order not to be misrepresenting things, I want to say right now that this appellation refers to outer dimensions only. In caliber, the gun I am about to describe, is .22 long rifle.

For some reason known perhaps to the makers, at least to them only, our native target pistols have always been afflicted with grips, fitting a seven-year-old boy to perfection. The proof of this can be seen at any assembly of pistol shooters, when one looks over the diversified attempts at correcting this shortcoming. There are hardly any of these arms that do not boast of either a special grip, more or less home-made, or additions, "back porches," pads, tape, and whatnot.

On the other hand, pistols of European manufacture, up to very recently did not meet the requirements of the man of the U. S. R. A. Length of barrel, form of lock, shape and pitch of grip, as well as sights made them unfit for our purpose. It must be admitted that a long and heavily barreled pistol with a very sloping handle, the latter compelling an extremely flexed wrist, is capable of very fine work. This applies particularly to the shooting of short series on the finely ringed 35 mm. target. In spite of this, the tendency on the other side of the ocean appears to be toward the plain trigger, comfortably stocked pistol.

Several splendid arms of this type have been brought out over there in recent years. These were not developed as a sort of compromise from existing arms, but designed from the ground up, for the intended purpose. The best of this class appears illustrated in this article. It is the product of Friedrich Pickert of Mehlis, Germany, and approaches more than any other the ideal form of target weapon. It combines the good points of a moderate weight with a perfect balance, low line of sight, a full, comfortable grip, quick lock, and an accurate barrel. In addition is to be mentioned a sight equipment with several novel features. The front sight, Patridge pattern, is clamped in a longitudinal slot of the raised matted rib. The rear sight is adjustable *by clicks*, for both elevation and windage. The rear sight blade being divided, allows the notch to be set at any width desired. The trigger pull is also adjustable for any reasonable weight. It will be noticed that the barrel proper is screwed into the breech piece, making it easy of replacement, since the extractor and mechanism remain undisturbed.

The gun is obtainable in two models, the hammer type, with 10-inch barrel and plain trigger, and in the "free" variety. In this latter form the hammer is inclosed, and is cocked by the backward movement of the locking bolt. It has also thumb and index finger rests, as well as a fine set trigger. Both models operate with tip-up barrel, actuated by guard lever. The workmanship is of the best, bluing and checkering being of the prewar class. The whole shows careful design.

While this was intended primarily as a description of the pistol *per se*, a few words about its performance would be appropriate. No matter how correct an arm might be in construction, its shooting qualities will form the final basis for its valuation. By this is meant not so much the accuracy of the barrel alone, but in the combination with a form tending to eliminate or modify the disturbing factors.

Whether the better performance of a comfortably stocked pistol, over one not so endowed, in the hands of the same shooter is due to anatomical or psychological influences, is problematical, and may remain so. Every practical shooter has had some experiences, satisfying to himself, on this point. Having a fairly large hand, I have been able, in the past, to do better and more consistent work with a home-made Remington pistol, than with a S. & W., relined with a tube of wonderful precision. Still, machine rest groups made with the latter were just *one third* the size of those produced by the former. For the same reason I prefer one make of revolver with a nice full grip to one with a deficient handle, although this has it over the first in point of accuracy.

The barrels of my pistols showed two points of marked difference to our accepted standards of boring and rifling. The bore itself is tighter by several thousandths of an inch, and the twist is rather quick, being less than fifteen inches to the turn. The rifling appears a bit deeper than that in our standard make. According to our lights, the tight bore and quick twist are not adapted to get the best results, but again the eating of the pudding always tells.

In my tests for accuracy, I employed a modification of Henry Walton Fry's six point rest in lieu of a machine rest. With it on a bed rock foundation, the human factor is almost entirely eliminated. The distance was 50 yards, weather conditions good to excellent. In all, four makes of ammunition were tried, three of which ran very much alike, with Peters Tackhole in the lead. The fourth was a poor fourth indeed. It was bought at a local store and may have been old. In fairness to its makers, and to the gun as well, I refrain from mentioning its illustrious name, nor is it included in the following list. Thirty 10-shot targets were shot, all of which showed a greater height than width, with the exception of one, the poorest by the way, which was broader than high, by an inch and one half. Total, as fired in order, not at one time:

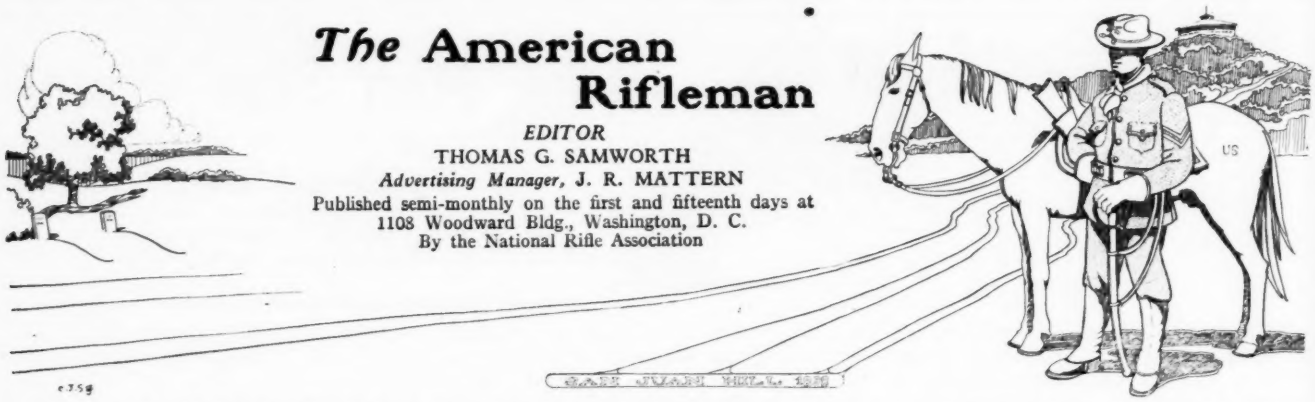
Ammunition	Diameter of groups, shots farthest apart										Average
C	1⅞	2⅛	1¼	1⅝	1½	2¼	2	1⅞	1½	2	1⅝
A	1⅛	1¼	2	1½	1⅞	1⅝	1⅝	1⅜	1⅛	1⅝	1½
B	2¾	2	1¼	1½	1¾	2	1⅝	2¼	1⅜	1¾	1 13-16

In this test, the "free type" pistol was used solely for the fact that the set trigger permits a let-off almost free from jar. I have no doubt but that this performance could be bettered somewhat, if the shooting were done from a solidly constructed machine rest; but even under the handicap of the improvised holder, the results were pleasing.

Summing up, the makers of this pistol have succeeded in combining *more* good features in one arm of this class, than we ever saw so assembled. Starting with an accurate barrel, which we take more or less for granted, plus a mechanical make-up, assuring ease of handling and long life, its greatest individual claim to distinction lies in the form, pitch, and size of the grip, and the relationship of the latter part to both the trigger and the line of sight. In these points lie the factors that make a pistol feel right and inspire confidence, which are conducive to good scores.

The American Rifleman

EDITOR
THOMAS G. SAMWORTH
Advertising Manager, J. R. MATTERN
Published semi-monthly on the first and fifteenth days at
1108 Woodward Bldg., Washington, D. C.
By the National Rifle Association



When the Spanish American War broke on the nation in '98 it found the country in its usual state of unpreparedness. The splendid staffs, the well trained units, the seasoned fighters of the armies of the Civil War were scattered and gone. But the spirit of those warriors was not dead. Volunteers flocked to the colors, some sadly untrained in campaign technique, but a majority skilled in the handling of firearms. At San Juan hill, at terrific cost but with Spartan valor they proved that the Spirit of '76 still lives.

APPARENTLY those well-meaning, but ill-advised persons who would disarm the country because a few irresponsibles use firearms for purposes of murder and robbery have met a set-back. Less than a year ago hardly a newspaper or magazine not directly connected with the shooting sport had a good word to say for those who insisted on their constitutional right to keep and possess arms. Throughout the country editors appeared to have been converted to the creed of those who contend that crime can be abolished by disarming all citizens, good, bad and in-between. Newspapers and magazines echoed the disarmament propaganda. But editors as a rule are practical folk. They go after the facts. Apparently they have them, because the tone of editorial comment on anti-gun legislation is changing.

The Pendulum Does Swing

On October 31 the *Saturday Evening Post,* which has, perhaps, the most cosmopolitan circulation in the country, expressed the belief that anti-pistol laws have the effect of disarming the law-abiding without in the least handicapping the criminal. On December 26 the same publication printed an editorial stating that it had received innumerable letters from all parts of the country approving its stand against any more anti-firearms legislation. It reiterated its opposition to further disarming of the decent citizen, explaining that it believed citizens should be encouraged, rather than discouraged, in the practice of traveling armed. "Gunmen," says the editorial, "would hesitate before holding up stores if they had reason to know that each clerk was armed." It also voices approval of the slogan "A Pistol in Every Home."

These discoveries are not news to THE AMERICAN RIFLEMAN. It has known for a long time that the most effective curb on criminals is the knowledge that the decent population is well armed and capably trained in the use of its arms. It views with satisfaction the changing attitude of other editors. But it does not regard the fight as won. Eternal vigilance is necessary to keep asinine and ill-advised laws off the statute books, because those who advocate them are both vigilant and vociferous.

So it behooves every individual who believes in preserving the right to possess the means of defending his home to encourage every agency which upholds a continuance of that right. It is of little value to be with a cause in spirit. Activity is what counts.

Letters to editors who opposed anti-firearms legislation commending their stand, letters to those who favor such legislation, should be written in an effort to show them the error of their ways and telegrams should be sent to law-makers to let them know that the great bulk of the American people do not want any further curtailment of constitutional liberty. The *Saturday Evening Post* indicates that the pendulum has changed its swing. It is up to lovers of firearms and to those who are men enough to want means of defense to give it a push and keep it traveling.

* * * *

Start the New Year Right

THE NATIONAL RIFLE ASSOCIATION has closed the most successful year in its history. It doubled its membership, improved its service to its members and aroused a greater interest in organized rifle shooting than has been displayed in this country in a generation.

There has also been a satisfactory improvement in the morale of the membership, members displaying more energy in bringing new shooters into the fold than has been displayed since the founding of the organization. This gives an encouraging outlook for the current year, but more of the same activity is needed if the National Rifle Association is to have the membership it should have as the liason organization between the basic defense of the country and the civilian shooters. The Association should have a membership of more than a million annual and paid members directly affiliated and not merely holding membership in an affiliated club.

Every shooting man should be a member of the Association, whether he shoots a rifle, handgun or shotgun. Every man who burns powder should subscribe for and read THE AMERICAN RIFLEMAN, the only publication in the country devoted exclusively and wholeheartedly to the interests of the shooters of the country and to the cause of national defense.

If the Association is to accomplish its mission and gain the same measure of success in the current year that it gained in the last, every member must do his share.

Entered as second-class matter, April 1, 1908, at the postoffice at Washington, D. C., under Act of Congress March 3, 1879. Obtainable by subscription, $3.00 per year. $2.00 to individuals or members of clubs affiliated with the N. R. A. Canadian subscription, $3.50. Foreign, $4.25.
The articles published in THE AMERICAN RIFLEMAN are not copyrighted and may be reprinted without further authorization.

A Short Cut to Exterior Ballistics

By Edgar Bugless and Wallace H. Coxe

Ballistic Engineers of the E. I. Du Pont de Nemours & Company

Part V. The Determination of Time of Flight

THE Determination of Time of Flight is the purpose of Drawing No. 5. The manipulation of the chart itself is illustrated in the example. All necessary known variables, such as angle of departure, ballistic coefficient, value of Z, and muzzle velocity entering into a solution of the chart have been determined previously from preceding drawings.

The construction of this chart depends upon a solution of the formula for Time of Flight; namely,

$$T = CT' \text{ Sec. } \emptyset$$

Where T = Time of Flight in Seconds
C = Ballistic Coefficient
T' = Secondary Function depending upon Range, Ballistic Coefficient, and Muzzle Velocity
Sec. $\emptyset$ = Secant of Angle of Departure. For all small angles Sec. $\emptyset = 1$

The nature of the secondary function T' appearing in the formula for Time of Flight is such that the function varies between wide limits at each muzzle velocity with variations in values of Z. This variation in the secondary function T' necessitates either a separate chart for each value of muzzle velocity or a series of velocity axes sufficient to cover all contingencies. In the chart for the determination of Time of Flight a series of muzzle velocity axes is used. These axes are designed, by means of exterpolation or interpolation as the case may be, to cover any muzzle velocity from 825 to 3500 feet per second.

The method of procedure for the solution of the formula and the layout of the chart is similar to the method used in the chart for the determination of angle of departure printed in the previous issue of THE AMERICAN RIFLEMAN. Table No. 5A contains the values and limits used in plotting Drawing No. 5. Values for T' and Sec. $\emptyset$ do not appear upon the printed chart, due to the fact that after the chart had been laid out and plotted to satisfy all values that might be substituted in the formula, the Sec. $\emptyset$ axis was graduated directly in terms of the angle of departure corresponding to plotted values of the Secant of the angle; and the graduations on the T' axis were erased, leaving this axis as a reference line.

Table No. 5B which is included for the purpose of affording a check for the user of the charts, contains all of the data of Table No. 4B given in Part IV of this series, with the addition of readings from Drawing No. 5 of values for Time of Flight of the various bullets listed.

Table No. 5C, which is a trajectory table of the .32 W. C. F. *(Concluded on page 18)*

Table No. 5A

TABLE OF VALUES USED IN CONSTRUCTING ALIGNMENT CHART FOR THE TIME OF FLIGHT THROUGH A SOLUTION OF THE FORMULA $T = CT' \text{ Sec. } \emptyset$

Where T = Time of Flight in Seconds
C = Ballistic Coefficient
Sec. $\emptyset$ = Secant of the Angle of Departure
T' = Secondary Function depending upon Range, Ballistic Coefficient and Velocity

Name of Axis	Symbol	Number Limits	Log. Limits	Log. Difference	L	Actual Length	Scale Number	Equivalent Scale	Scale to Use
Horizontal	Z	0.73 — 20000	$\bar{1}.86332$	4.43771	2-½	11.09	4	40	40
Range for C = 1			4.30103						
Secondary Function	T'	0.000219	$\bar{4}.34044$						
(Called Reference				5.26335	2-½	13.16	4	40	40
Line on Chart)		40.156	$1.\bar{6}0379$						
Sec. Angle of Departure	Sec. $\emptyset$	1.0—1.41421	0.0—.15045	0.15045	100	15.05	0.1	10	10
Dummy Axis							4.1		
Ballistic	C	0.09 — 1.37	$2.\bar{9}5424$	1.18248	11-1/9	13.14	0.9	90	90
Coefficient			$0.1\bar{3}672$						
Time of Flight	T	0.00001971	$5.\bar{2}9469$	6.59405	2	13.19	5	50	50
		77.401	$1.\bar{8}8874$						

Sec. $\emptyset$ — Ref. Line = 15" Dummy Axis = $\frac{.1}{4.1} \times 15$ from Ref. Line = .368" from Ref. Line

Dummy Axis — C = 20" $T = \frac{0.9}{5} \times 20$" from Dummy Axis = 3.6" from Dummy Axis

In the construction of this chart as in the construction of the chart for Angle of Departure, it was found necessary to use a series of velocity axes due to variations of T' for different velocities. The axis for the angle of departure was graduated directly in terms of the angle instead of values for the secant of the angle as determined by the formula.

Table No. 5D

TRAJECTORY CHARACTERISTICS OF THE .38-55 W. C. F. PETERS' 255-GRAIN METAL CASED BULLET AT A RANGE OF 300 YARDS WHEN STARTING WITH A MUZZLE VELOCITY OF 1700 FEET PER SECOND AGAINST A 5-MILE CROSS WIND

Characteristic	Formula	Calculated Result	Chart Reading
Ogive			2
Coefficient of Form (i)			1.25
Ballistic Coefficient (C)	$C = \frac{W}{id^2}$	.206	.205
Muzzle Energy (E)	$E = \frac{MV^2}{2}$	1630 foot pounds	1700 foot pounds
Value of Z	$Z = \frac{X}{C}$	4600	4600
Remaining Velocity	$S_s = Z + S_t$	1022 foot seconds	1020 foot seconds
Angle of Departure ($\emptyset$)	Sin 2 $\emptyset$ = AC	28 minutes	27 minutes
Angle of Fall (W)	Tan W = B' Tan $\emptyset$	39 minutes	40 minutes
Time of Flight (T)	T = CT' Sec. $\emptyset$	.75 seconds	.85 seconds
Height of Trajectory (Y)	Y = H X tan $\emptyset$	26.2 inches	27 inches
Wind Deflection (D)	$D = \frac{WZ}{V \text{ Cos } \emptyset}$ DoW	5.07 minutes	5.1 minutes

Chart for Determining Time of Flight

GIVEN—Angle of Departure (Ø)
Ballistic Coefficient (C)
Value of Z
Muzzle Velocity (M.V.)

EXAMPLE: Find the time of flight of the 172-grain Frankford Arsenal 1925 National Match Bullet when fired from a .30-06 Springfield with a Muzzle Velocity of 2750 foot seconds over a range of 500 Yards.

Muzzle Velocity (M.V.) = 2750 Ft. Secs.
Angle of Departure (Ø) = 14′
Value of Z = 2700
Ballistic Coefficient (C) = .56

FIRST STEP —
Locate Value of 2750 on Upper Axis for Muzzle Velocity

SECOND STEP —
Locate Value of 2750 on Lower Axis for Muzzle Velocity

THIRD STEP —
Connect these two values with a straight line, shown by dotted line on chart

FOURTH STEP —
Locate Value of 2700 on Z Axis

FIFTH STEP —
Locate corresponding values of 2700 on muzzle velocity line for value of 2750. This is accomplished by locating 2700 on Muzzle Velocity lines 2500 and 3000 and connecting the two points, shown by broken line on chart. The intersection of the broken line and the dotted line is the point desired

SIXTH STEP —
Connect the value 2700 located on the Z Axis in Step Four with the point of intersection of the corresponding value of Z and the muzzle velocity value of 2750 and continue this line to the right until it intersects the Reference Line, giving Line No. 1 on chart

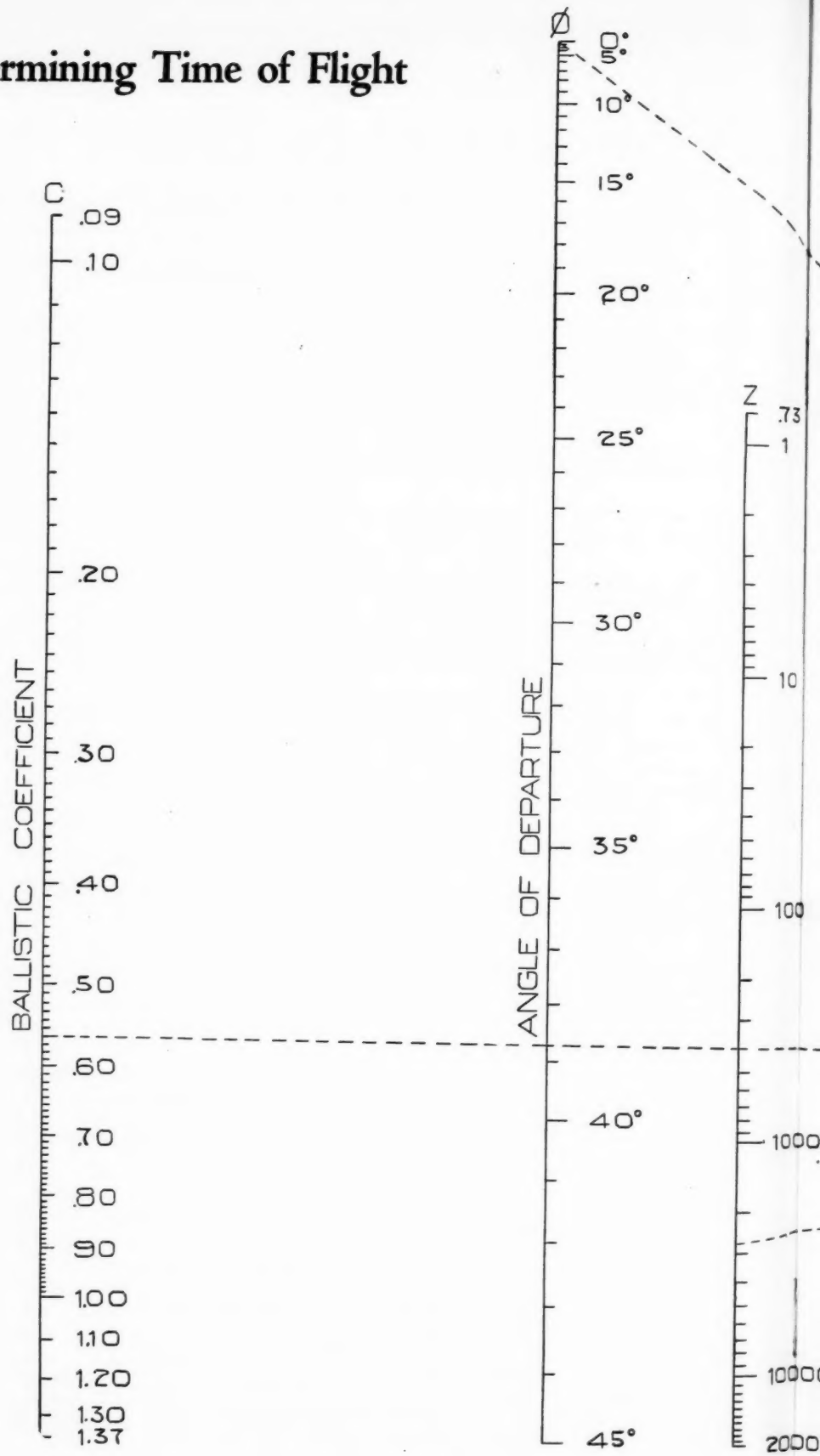
SEVENTH STEP —
Locate value 14′ on Ø Axis

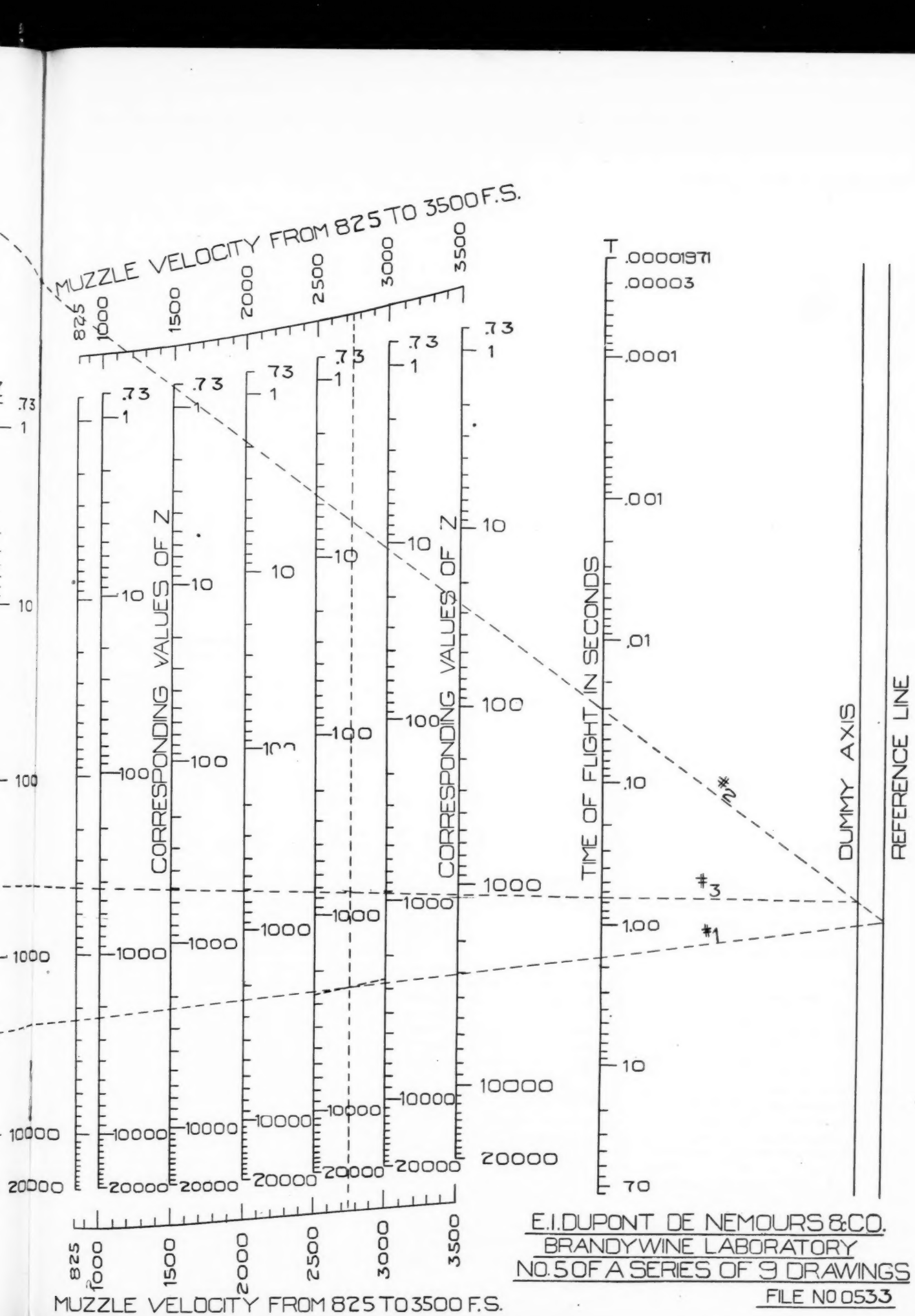
EIGHTH STEP —
Connect point located on Ø Axis with point of intersection of Line No. 1 and Reference Line, giving Line No. 2 on Chart.

NINTH STEP —
Locate Value .56 on C Axis

TENTH STEP —
Connect the point located on the C Axis with point of intersection of Line No. 2 and the Dummy Axis, giving Line No. 3 on Chart

ELEVENTH STEP —
The intersection of Line No. 3 and the T Axis gives the required time of flight .65 seconds.





E.I.DUPONT DE NEMOURS & CO.
BRANDYWINE LABORATORY
NO. 5 OF A SERIES OF 9 DRAWINGS

FILE NO 0533

Exterior Ballistics

(Concluded from page 15)

80-grain bullet over a wide range of 200 yards, and Table No. 5D which defines the flight of the .38-55 Peters' 255-grain bullet over a range of 300 yards, are self-explanatory, and are included for the twofold purpose of supplying a standard of comparison for reading the charts and illustrating the degree of accuracy that can be expected for different trajectory characteristics.

(To be continued)

Table No. 5B

From Drawing No. (1) (2) (3) (4) (5)

Caliber	Bullet	Muzzle Velocity	Ogive	Dia. of Flat Nose in Calibers	Coefficient of Form	Dia. of Bullet in Inches	Ballistic Coefficient	Z 300 Ft.	Remaining Velocity in F. S. at 300 Ft.	Angle of Departure in Min. when X = 300 Ft.	Time of Flight in Seconds over Range of 300 Feet
.22 Long Rifle	R. A. 40-gr. Lead	1070	2	....	0.85	0.222	.137	2200	930	17	0.34
.25-20 W.C.F.	R. A. 60-gr. Hi-Speed	2200	4	0.10	0.85	0.258	.152	1975	1700	4.2	0.17
.25-20 W.C.F.	Peters 60-gr. Hi-Speed	2200	4	0.08	0.75	0.258	.172	1750	1750	4.0	0.17
.25-35 W.C.F.	Peters 117-gr. Hi-Speed	1975	4	0.12	1.10	0.258	.228	1300	1650	4.7	0.18
.250-3000 Savage	Western 87-gr. H.P. Exp.	3000	6	0.08	0.70	0.258	.267	1120	2630	2.0	0.11
.250-3000 Savage	Western 100-gr. Lub. S. P.	2850	4	....	0.60	0.257	.360	830	2580	2.2	0.12
.270 Winchester	W. R. A. 130-gr. Ex. P.	2700	8	....	0.49	0.277	.496	600	2500	2.4	0.12
.30 Newton	West'n 180-gr. Lub. Ex. Pt.	2500	8	0.07	0.70	0.308	.385	780	2280	2.9	0.14
.30-06 Springfield	R. A. 110-gr. Hi-Speed	3500	6	....	0.70	0.308	.237	1260	3050	1.6	0.095
.30-06 Springfield	West'n 150-gr. Lub. Ex. P.	2700	6	0.10	0.70	0.308	.323	925	2410	2.5	0.12
.30-06 Springfield	R. A. 180-gr. Hi-Speed	2700	8	....	0.49	0.308	.560	540	2520	2.4	0.12
.30-06 Springfield	West'n 180-gr. Ex. P.	2700	6	0.10	0.70	0.308	.385	780	2460	2.5	0.12
.30-30 W.C.F.	Peters 170-gr. M.C.S.P.	2000	1.5	....	1.00	0.305	.261	1150	1710	4.4	0.17
.30-40 Krag	W. R. A. 220-gr. M. C.	2000	1.5	....	0.95	0.308	.348	865	1780	4.5	0.18
.32 Colt Auto	R. A. 71-gr. M. C.	825	1	....	1.10	0.312	.095	3150	710	27.5	0.45
.32 W.C.F.	W.R.A. 80-gr. Super-Speed	2000	4	....	0.75	0.311	.158	1890	1550	5.1	0.18
.32 Win. Spl.	R. A. 110-gr. Hi-Speed	2550	6	0.10	0.70	0.321	.218	1370	2160	2.9	0.13
.32-40 W.C.F.	W. R. A. 165-gr. M.C.S.P.	1500	3	0.17	1.10	0.320	.209	1425	1240	8.4	0.24
.35 Rem.	Western 200-gr. Lub. Ex. P.	2000	4	0.10	0.75	0.359	.296	1010	1750	4.6	0.13
.38-55 W.C.F.	Peters 255-gr. M. C.	1700	2	0.20	1.25	0.376	.205	1450	1395	6.3	0.22
.40-65 W.C.F.	R. A. 260-gr. Lead	1420	2	0.22	1.25	0.405	.180	1650	1160	9.2	0.24
.40-70 W.C.F.	R. A. 330-gr. Lead	1380	3	0.23	1.15	0.405	.248	1200	1190	9.7	0.25
.40-90 Sharps	R. A. 370-gr. Paper Patch	1400	1.5	0.18	1.25	0.405	.257	1160	1205	9.1	0.24
.45-70 W.C.F.	R. A. 405-gr. Lead	1360	1.5	0.20	1.25	0.459	.219	1360	1160	10.0	0.27
.45-70 W.C.F.	W. R. A. 300-gr. M.C.S.P.	1890	1.5	0.25	1.35	0.456	.153	1950	1460	5.8	0.20
.45-90 W.C.F.	W. R. A. 300-gr. Lead	1550	2	0.25	1.25	0.458	.162	1840	1220	8.5	0.24

Table No. 5C

TRAJECTORY CHARACTERISTICS OF THE .32 W. C. F. 80-GRAIN BULLET AT A RANGE OF 200 YARDS STARTING AT A MUZZLE VELOCITY OF 2000 FEET PER SECOND AGAINST A 15-MILE CROSS WIND

Characteristic	Formula	Calculated Result	Chart Reading
Ogive			4
Coefficient of Form (i)			0.75
Ballistic Coefficient (C)	$C = \frac{W}{id^2}$	.158	.158
Muzzle Energy (E)	$E = \frac{MV^2}{2}$	710 foot pounds	710 foot pounds
Value of Z	$Z = \frac{X}{C}$	3800	3800
Remaining Velocity	$S_a = Z + S_t$	1224 foot seconds	1220 foot seconds
Angle of Departure (Ø)	Sin 2 Ø = AC	12 minutes	12 minutes
Angle of Fall (W)	Tan W = B′ Tan Ø	16.5 minutes	17 minutes
Time of Flight (T)	T = CT′ Sec. Ø	.386 seconds	.42 seconds
Height of Trajectory (Y)	Y = H X tan Ø	7.3 inches	7.5 inches
Wind Deflection (D)	$D = \frac{WZ}{V \cos Ø}$ DoW	11.1 minutes	11 minutes

The Cleaning of Firearms

(Continued from page 10)

removed the salt from such a flat, easily cleaned surface; and it does not tell me whether or not the material under investigation contains any injurious ingredient. It is known that some solvents have been put out which contained an excess of oleic acid, and it is on this they depend to keep the bore bright, oleic acid being a free fatty acid and injurious.

The salient points gleaned from the above may be embodied in the following, and the reasons are apparent.

Recommendations

Clean with a *good* aqueous solvent, using a stiff brass wire brush.

To obtain complete protection for firearms, only two steps are necessary. The first is to clean the barrel so that it is absolutely free from potassium chloride. The second is to cover the surface with a good non-corrosive grease that will protect it from ordinary atmospheric rusting. This is best accomplished as follows:

Clean the barrel with a good aqueous solvent, using a stiff brass wire brush. Many do not like wire brushes, but a brass brush is softer than the barrel steel and can do no damage. The use of a stiff brass brush is extremely important, as it permits of the complete dissolving of the potassium chloride by breaking up the insoluble powder residue and removing any lead or other metal fouling. The aqueous solvent will dissolve all the potassium chloride and hold it in suspension. Remove and slush out all the solvent which may contain potassium chloride solution, and get the bore clean and dry.

Now grease the bore with cosmoline or a good gun grease. Never use tallow or any organic grease for this purpose, as it may contain oleic acid and may cause corrosion. If cosmoline is not at hand, use any of the well known brands of gun grease which can be purchased from your sporting goods dealer.

It is not necessary to put a heavy coating of grease on the bore of the gun. Take an ordinary cleaning patch and place a small lump of grease in the middle of it, about twice the size of an ordinary pea. Work this grease up into the patch until the patch is thoroughly saturated with it, and then run this patch back and forth through the bore several times. You can then put the gun away and forget about it. There is no sweating out, and as the aqueous solvent has removed the potassium chloride once and for all, there is no necessity of all the hocus-pocus of repeated cleanings. This method is practically the same as that generally employed, and its success or failure hinges on the character of the cleaning medium used.

Alternate Method and Not So Safe

Clean with water, preferably boiling, and the use of soap is recommended. A wire or brass brush and plenty of elbow grease are absolute essentials in this method, to loosen up and remove insoluble powder fouling, metal fouling and lead, and more time should be spent at this than in the solvent method. Care must be exercised that patches used in drying do not stick in the bore, as water is not a lubricant. The greatest care must also be exercised to see that the bore, chamber, lock action, extractors, ejectors, magazines, etc., are ABSOLUTELY DRY. Then oil as above. Lead and metal fouling must be treated separately.

This method is good in the hands of a very careful person, but should not be used in teaching boys, soldiers or other groups among whose number are sure to be some careless ones, as ruined guns will result.

In closing there are added a few useful suggestions.

Get away from the old bunkum of repeated cleanings. Cleaning is simple; certain things happen and must be guarded against, but the happenings are constant. Complete protection of a gun under all conditions just as surely follows correct cleaning methods as night follows day.

Keep guns in cases or in a covered gun cabinet. Sodium chloride, a water soluble salt,

similar in its action to potassium chloride, is present in perspiration, and your friends in handling your guns are not always careful to keep their hands off the metal parts. If you use a solvent which dissolves potassium chloride, go over the exterior of your guns occasionally with a cloth dampened with the solvent. This is excellent in gun stores.

Gun cases should be selected with care, and should be lined. Leather next to the metal of the gun will frequently corrode badly, probably from the tannic acid in leather. The case lining should be *dry* and not of a character to absorb atmospheric moisture. If by any chance a gun case has become damp, dry it thoroughly before using it to put a gun away.

In examining the bore of a gun, don't blow your breath in it. A seemingly silly suggestion, yet a thing easily and probably frequently done.

Use ordinary common sense in putting a gun away. Do not, for example, stand it up in a corner in the exhaust steam from a radiator.

Do not stopper the bore of a gun; this may induce condensation or sweating and cause rust.

Remember the longer a gun is left after firing, and before cleaning, the harder it is to clean.

In hunting in North countries with the temperature below freezing, do not bring a gun into a heated room until a complete disassembling and cleaning is intended. A cold gun brought into a hot atmosphere sweats and gets thoroughly wet, lock action and all. When the temperature is below freezing, there can be no moisture in the atmosphere and consequently no corrosion.

If it is decided to use the solvent method which is obviously by far the best in the long run, determine carefully the efficiency of the solvent selected. A little care at this stage of the game may save your pet gun and a lot of wear and tear on your nervous system.

Satisfy yourself as to the truth of the statements contained in this article, try out the methods outlined, if you will, carefully watching your gun for corrosion. Submit it to the hardest tests you can think of, only remembering the cause of corrosion as outlined above, and checkmating that, and you will arrive at the same conclusions I have.

What a lot of bunk there is about the simple act of gun cleaning!

Game Rifles vs. Target Rifles

By Ellerton James

I HAVE just finished reading Capt. Askins' remarks in the December 15 RIFLEMAN and I should like to add a few of my own.

With regard to the 505 Gibbs, that rifle is not meant for shooting anything over one hundred yards and probably will be used nine times out of ten at some sort of charging animal inside fifty yards. Under these circumstances the accuracy of this rifle at over seventy-five yards is immaterial. What it is meant to do, is to provide terrific stooping power together with sufficient accuracy at short ranges so that a big animal, African buffalo, rhinoceros, or elephant, can and will be halted in his charge before he has a chance to step on you, and judging from every book I have read on African hunting you want to shoot your rhinoceros and your elephant and your buffalo inside fifty yards if you want to survive until the next day.

That rifle never was built for American game and in my judgment never should be used on American game, as we have none in this country of the kind that that rifle was meant for. The same applies to the 470 Whelen. Personally, I should say it applies to the 400 Whelen, though that might be a doubtful question.

Now, as to recoil, I have never shot the 505 Gibbs or any rifle like it, but I have shot a 450 single shot Greener weighing under ten lbs., which is practically an elephant rifle. I have never shot it lying down, but I have shot it repeatedly sitting down, at a target and also at game and I have never known the recoil to bother me. I have shot the 375 Holland Magnum lying down, at game, and I have never felt the recoil even then. I have shot it for target one hundred or two hundred rounds with nothing but a thin outing shirt on in summer, and not been bruised up, but I have never shot more than thirty rounds at a time, and I simply shot it to be sure the sights, trigger pull, and ammunition were all right; and thirty rounds will tell me that as well as one hundred.

My personal habit, and that of one or two other men whom I know, is to take either a 22 Springfield or a 25, the rifle weighing just about the same as the big rifle with identical trigger pull and sights, and shoot that for target either at a black spot on a white piece of paper or at bobbing lobster buoys, for as many rounds as I can spare time for; then if I shoot a few rounds from the big rifle to be sure it is all right, I can go off into the woods and know that I can kill game with that 375 up to two hundred with certainty after this practice; and I think any other man who will take the same trouble will have the same result. But I don't think there is a man living, except possibly one or two English professional targeters, who can use the 375 Magnum or any heavier rifle for a target rifle and not get himself absolutely gun-shy. They are not meant for target rifles; they are not meant for anything except game shooting where very few rounds a day are fired, and they never should be used except as such.

As a game rifle I know the 375 Holland Magnum intimately, and I think a man can shoot that at game steadily and not flinch from it. I have never had a chance to shoot game as it is shot in Africa to supply meat for a caravan. How a man would stand up with that rifle under those circumstances I don't know, but as long as he was shooting at game and not shooting more than two or three rounds a day I think he would not feel the recoil. The recoil of my 10-bore gun loaded with 1 5-8 ounces of shot and 5 dr. black powder or a similar charge of smokeless, has a heavier kick to it than either the 375 or 450 and yet one day last autumn I fired one hundred rounds in two hours. My shoulder was not black and blue but my middle finger was, and I don't flinch from that gun.

As far as accuracy goes I know nothing about the Gibbs, but shooting from a muzzle and elbow rest a good shot can and has, with my 450, got ten shots inside a three-inch ring at one hundred yards. I never have because I am not a good enough shot, but with the same muzzle and elbow rest I can make the Holland do at least that, and good shots have done a good deal better.

Speaking personally again, the average American sportsman who is going in for all kinds of game shooting does not want anything heavier than the Springfield or better yet the 300 Magnum. I got the 375 because I was and am confining my shooting to moose, bear and goat with sheep when I can reach them. For moose I want something heavier than the Springfield for use in thick country where I am likely to be taken, as I was last autumn, where I could see the whole of the horns of a moose and the top of his head but his chest was covered with an absolutely thick mass of small twigs and branches. He was fifty yards away and if I had to, I shouldn't have been afraid to fire at him with a 300 gr. Holland bullet, because I know that that bullet will smash through small twigs and leaves without being turned from its course and have plenty of penetration left to make Mr. Moose very sick even if I hit him on one side of the chest or too low down for a vital shot; whereas I have a very strong suspicion that the 180-gr. Springfield bullet would not smash through those twigs and leaves and keep its direction or have the power to kill if it hit in a most vital spot, even if it did get through.

In closing I want to say once more that it is unfair to use the 375 Magnum or other of the big rifles as target rifles. They were not meant for it and you probably will spoil your own shooting forever if you so use them for any length of time.

If you want to shoot at a target, get a target rifle, or if you want a rifle for mixed target shooting and game shooting get a rifle adapted to both uses, such as the Springfield; but if you feel most of your shooting is going to be on moose, brown bear or goat, then get one of the heavier rifles and keep it for big game shooting only, simply using it upon the target enough to be certain that up to say two hundred yards you can put a bullet into the vital spot on a standing moose or standing bear with certainty, and up to three hundred yards most of the time. After that let the rifle alone as far as target practice goes except for a few shots just before you start on your trip to verify the alignment of the sights, etc.

In closing I should like to add this moral: Don't use a trip-hammer to crack walnuts; don't use a cannon to kill a deer; adapt your rifle to the kind of game you expect to use it on and don't use it for something it was never meant for.

Improving the .45 Colt Cartridge

By Alton L. Wyman

THE .45 caliber single action Colt has survived a hard life, and no less is it dying a hard death. Officially declared obsolete and dead, it just as often rears up looking for the accursers and ready for another fight for life. I have broken more parts in this gun, mostly triggers and hammer notches, than in any I possess, and yet it is the most fascinating of the lot. It has become a convention with me, to think up stunts to conquer the beast, but it always ends in a compromise at best. Right now we understand each other tolerably well; tomorrow we may have a falling out again. It isn't altogether the fault of the gun, since reloaded ammunition isn't the same as factory loads for which the gun was designed, especially the bullet. Factory bullets have hollow bases—lets them fill the grooves, which solid bases don't do, especially with sub-loads. I reload mine with solid base bullets—Bond 243 grain and 184 grain.

First off, I reamed out the cylinder throat to .454 inch, same size as the bullets after going through my sizer. Seems like it ought to reduce the resistance, and maybe it does, but the lead now fills the grooves full, even with light loads. No more unburned powder than before and "he" barks just as snappy as ever. That solved one problem satisfactorily. When I can recover the lead, I have no hankering for light bullets, but a California clay bank in the rainy season just swallows and hides forever every bit of lead tossed to it.

Yes, the old range is now subdivided into city lots and we are wandering Willies. A deep gully some seven miles from Santa Monica is about our last stand for a place to shoot. That's where the clay bank is. I don't mind burning the powder, but I have no stomach for salting a common clay bank with perfectly good lead. This crazy notion got me to puttering with reduced loads and light bullets, and nearly got my religion. The .45 Colt case is not a case at all—it's a tank, and a big one. I cut a quarter inch off a dozen of them without bad results, but Chauncey Thomas shooed me off from that—said the bullets would fill the chamber back of the throat and refuse to move on until it worried off the side of that chamber, so I stopped while the stopping was good, but my trouble has been to get a solid base bullet to expand under any circumstances in this gun. I like the whang of black powder, but too much bother mixing in a charge of smokeless to clean out the black. Seems like if we keep at a thing long enough, the little jinx gets peeved and lets out a remedy. He told me to put a thick "liner" in these .45 tanks to reduce the powder space. I did and, by golly, the stunt oscillates right to form. The sketch shows the works. The liner is of aluminum rod, drilled and reamed to the shape shown, and long enough to reach from the base of the case to the base of the standard bullet, although the sketch shows the light bullet. As little as three grains of No. 5 du Pont ignites and burns with all the pep it has, but the bullet gets there faster if thrown by hand. Things commence to get interesting with five grains, but it takes six grains to get the mule-skinner effect. Seven grains? No, I haven't tried that yet. We're on good terms now and I don't want to ride the old mare to death; a sub-load was my goal. Seven grains of No. 5 or No. 75 just fills the liner and may be as safe as an ocean liner. Certainly the case walls are substantially reinforced by the aluminum, if it fits tight. If the liner is not tight, the pressure would equalize all around it and there would be no reinforcing effect. Now with black powder these lined cases hold a shade over twenty grains of FFG, when snugly packed, but not compressed by the 184 grain bullet. It makes a most pleasing load to shoot, but the velocity is low; for ten to fifteen yards it is satisfactory. The liners are drilled one-quarter inch and reamed to 5-16 inch at the top. Some of the liners I drilled only—didn't ream them out. Loaded with 500 grains of No. 5 and the 184-grain bullet, the report is very snappy, but I preferred the reamed kind with six grains of powder.

In none of these experiments was there any swelling of the cases, due to firing, that could be "miked," a pretty good indication that pressures were not dangerous, although they were probably in excess of the standard ammunition pressures. This was indicated by the primers which were flattened out especially, but were slightly punctured. It was this way, to wit and *i. e.*, the hammer spring on my S. A. Colt was set up very tight and when snapped, the firing pin made an unusually deep dent in the primers, leaving the metal exceedingly thin, so that it was comparatively easy for the explosion to break through the bottom of the dent. Standard loads rarely caused this rupture; five grains of No. 5, and over, invariably caused rupture.

Since easing off the mainspring, ruptures of the primer do not occur with any loads tried. Using six grains of No. 5 or No. 75, the powder burns completely—another kink in the little jinx. Seven grains in plain cases, heavy bullets, leaves a considerable unburned residue.

Aluminum was used in making the liners because it is light weight. Yes, they can be made by hand, that is, with hand tools, but a small lathe is the thing. Fact is, if you are going to do much constructive experimenting these days, a lathe is as necessary as a reloading tool. My No. 4½ Barnes lathe is the "mostest" thing that is for light work; 9-inch swing and 24-inch centers, screw cutting and back-geared. I have a countershaft and fixings for power drive, but prefer foot power for experimental work. I picked it up in pre-war days at an easy price.

The .45 S. A. Colt cartridge or gun cannot be even considered in the light of target equipment, for making tin cans dance and other loose work, it is my choice. I checked the entire grip on mine, which improved the hold wonderfully. I believe that the accepted method of holding the gun is to grasp the grip with the thumb and third and fourth fingers only, leaving the little finger free. I also get best results that way. And too, I find that full black powder charges give the most hits, due probably to the fact that any slight differences in gripping does not alter the jump of the heavy recoil as much as they do the less violent jump of smokeless.

With a proper background, such as the shady side of a fence, and with the light shining right, the bullet in flight is easily seen by standing a little to one side of the firer; a short silvery streak, it appears to be. Hollow base bullets might not be so easily seen. During the several years I have owned my .45, I have tried some odd stunts. Have cast everything from tacks to empty .22 short cases into the bullets; some with soft lead points and others with a coil of copper wire cast around them. Tried reaming out some bullet bases—a deep, wide cone like the old Minie ball. The birds took the rifling, no fooling, and when the iron plate backstop stopped them their shirts just went right over their heads, and the whole mass flattened out flat, if not flatter.

An Old-Time Sniper

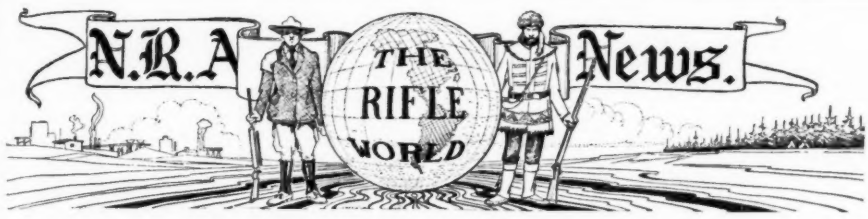
(Concluded from page 6)

imagination running riot we depicted the scenes as they must have been at the time when the old round ball sped across, true to its mark at about six hundred yards.

The other day we stood at the same spot, but the Muse would not come. Gone is the old tree, and reared upon its place is an unsightly bungalow. We whites must expand.

EDITORIAL NOTE—The interesting narrative just presented by Captain Richard portrays an authentic incident which occurred during the siege of Fort Meigs. Present-day riflemen, or those unfamiliar with the merits of the old Kentucky rifle, may express some doubt as to the ability of a flint lock to perform the feat described. For the benefit of such we wish to say that recent experiments have demonstrated that a flint lock rifle of about .45 caliber will develop an average muzzle velocity in the neighborhood of 1350 feet and can be given an extreme muzzle velocity of 1600 feet. The extreme range of such rifles ran from 900 to 1200 yards. At a range of 600 yards a round ball weighing 140 grains and fired at a muzzle velocity of 1350 feet will have a remaining velocity of 445 feet.

Nevertheless this feat may seem incredible to riflemen of the present day whose acquaintance with flint lock rifles has been limited to a few dilapidated and rusty specimens of army muskets, and who have never enjoyed the privilege of firing a rifled flint lock in good condition, with the bore clean, and the flash hole or vent not rusted away to three or four times normal size. Furthermore, there was an art in properly loading these weapons, an art which is lost today.



Conducted by C. B. Lister

Doings Down in Dixie

W. B. Atchley

Our club Saturday night, December 12, completed its 1925 Indoor Championship Match, which was won by J. S. Bonner, George Hoover coming second. An eleven-inch silver cup was presented Bonner, and a silver medal given Hoover.

Am attaching the plan of the match, which was printed only as an example for the members, and is not in reality the way it came out. From it, you can see the resemblance to a golf tournament. It is probably not your idea of the way a rifle match should be held. I attempted to draw the match out as long as possible in order to bring up the attendance as long as it lasted, and as it was, it covered six shooting nights. This plan, I figured, would help our attendance more than by holding one match, on the customary plan, which would last one, or possibly two nights, and then "all over," with the losers losing interest, which has been our experience on many occasions. This arrangement, I believe, did help our attendance, and even after the majority had been eliminated, some of them who might otherwise have stayed away, came back through interest in those who were still shooting.

In each round, each man fired ten shots prone, five sitting, five kneeling, and ten standing, or a possible 300 points, and we, having been in the habit of slighting the standing positions indoors, were really surprised at our scores, and from now on, will probably shoot as much standing as in any other position.

We are going farther than that. At an early date, the participants in this match will be divided into two teams, and an attempt will be made to divide them as evenly as possible on some systematic basis, taking into consideration the averages each man made in the above match. This team match will, of course, not mean anything, but will furnish some more competition, which I believe helps any rifle club to a very great extent. As a prize for the winners, the losers will be required to foot the bill for a dinner for all participants, and to make it more interesting, medals will be given for the highest averages in each position, including a medal for the highest aggregate of all positions.

Getting back to the championship match, I might mention that the biggest part of the money for the cup and medal was raised by selling our .30 caliber brass empties, and the remainder was taken care of by a fifty-cent entry fee.

Now, the details of the match:

Twelve men felt strong enough to enter; the rest either figured they "didn't have a chance," or "didn't give a —;" you know, they have 'em in all rifle clubs. The second round saw three eliminated; third round sent out two, as did the fourth round; the fifth round was the downfall of one, leaving Bonner and Hoover to shoot the finals. Hoover had been beaten once, and Bonner was undefeated as they went into the finals. This meant that Hoover would have to beat Bonner twice straight, and if Bonner beat Hoover once, then Bonner was the "Champ." As it happened, Bonner beat Hoover on the first "twirling," thereby making Bonner's record clear of a single defeat. Bonner's score against Hoover was 278 x 300, with Hoover 13 points down. This score of 278 was the highest total of any of the entries throughout the match, except Hoover, who fired a like score against another opponent in the preceding round.

Other good scores were made; viz., totals of 274, 273, 272 and so on, Bonner making a 274 against "yours truly," who was thereby defeated in that particular round. G. M. Miller also made a 274 against Hoover, the night he turned in his 278. As the scores turned out, they showed little difference in the marksmanship of Bonner and Hoover. Out of a possible 1800 points, Bonner made 1608, against Hoover's 1606, but Hoover was considered badly beaten under the plans of the match, having been beaten one time by "this Secretary," and the second time by Bonner.

Some of the better scores made in the various positions were—Prone, 8 "Possibles," by six entries, two of them duplicating; sitting and kneeling, a 99 by myself; an 89 standing by Bonner.

Incidentally our club would like to get mail or telegraphic matches with some of the other affiliated clubs, if you would be kind enough to give us a little "challenge" in The American Rifleman.

Address—W. B. Atchley, P. O. Box 480, Nashville, Tenn.

CLUB CHAMPIONSHIP MATCH

Members will draw for numbers, which will run as high as the number of entries.

A contestant, by losing two matches, will become eliminated.

An entry only shoots against one other entry, in each round, this pairing to be called a match.

Entries will be paired in the order shown in Round One, below.

For example:

Round 1

1 vs. 2, 3 vs. 4, 5 vs. 6, 7 vs. 8. Winners 1, 4, 5, 8. Losers 2, 3, 6, 7.

Round 2

Winners of Round 1 paired:—1 vs. 4, 5 vs. 8. Losers of Round 1 paired:—2 vs. 3, 6 vs. 7. Winners 2, 4, 7, 8. Losers 1, 3, 5, 6. (Nos. 3 and 6 have lost two matches and are therefore eliminated, 4 and 8 are unbeaten and 1, 2, 5, 7 have each lost one match.)

Round 3

4 vs. 8, 1 vs. 5, 2 vs. 7. Winners 1, 2, 4. Losers 5, 7, 8. (Nos. 5 and 7 have lost two matches and are also eliminated.)

Round 4

1 vs. 4, 2 vs. 8. Winners 1, 2. Losers 4, 8. (No. 8 has lost two matches, being eliminated.)

Round 5

2 vs. 4. Winner 4. Loser 2. (No. 2 is now eliminated, leaving 1 and 4.)

Final Round

1 vs. 4. Winner of this round wins championship, as each has already lost a match.

RULES FOR PAIRING AFTER FIRST ROUND

(1) In the pairing for any round, winners of the preceding round will always be paired, and the losers of any round will be paired in the succeeding round (see Round 2 above), unless there is an uneven number of winners and losers, in which case the winner bearing the highest number will be paired with the loser of the preceding round bearing the highest number. (See Round 4 above.)

(2) Pairings of contestants, observing (1), will be made in numerical rotation. (See Round 2 above.)

(3) If, on observing (1) and (2), it so happens that an entry is paired with another entry against whom he has already been matched, in any preceding round, he will then be matched with the next entry in numerical order, with whom he has not been paired previously. (See Round 4 above.)

(4) It will always be proper to arrange the pairs for any round, so that eliminations will come about as quickly as possible. (See Round 3 above.) This rule will take precedence over Rule (2).

* * *

NEWS FROM KING'S MILLS, OHIO

The following extracts from the report of the Deerfield Gun Club at King's Mills, Ohio, should be of interest to all civilian club secretaries. It contains several ideas that may be adopted by any organization.

"About six active rifle shooting members held a meeting and got out a snappy circular letter inviting all members to participate in a program to increase the interest in rifle shooting. This increased the number of our rifle shooters to about 45, in November of 1924. We divided these up into five teams of nine men to the team, with one of the original stand-patters as Captain of each team. One Captain took his team through Monday night, another Tuesday, and so on, leaving Saturday night as an open night for any one to shoot. An official score was shot each week by each member. Three weeks constituted a match in all stages. At the end of this time seven, eight or nine high scores of each team were counted, this variation being caused by one or two and even three shooters in any one of the teams not finishing his score. This was done so as to have the same number of scores in each team to count. The winners were then given a big send-off to an oyster supper or a fish fry, whichever was decided upon, all shooters to attend and the four losing teams to pay the bill.

"After the first match was over, each shooter was classified according to his shooting ability into a class in which he could compete. The classes were from 'A' to 'I' inclusive, five men to the class. Prizes were given to the winner of each class. At the same time the records were kept for the five teams as before so as to see who would be the winners and get the free entrance to the next banquet. After three matches had been pulled off we began to eliminate. They all fought hard to stay on but of course gave up willingly if they lost. This gave us about 16 or 17 shooters of a pretty good class. These fought it out to see who would get on the first team, and, taking it all in all, we finished with a fine bunch of shooters and a square and honest lot of fellows. This was proved up by allowing each shooter to draw his own ammunition and trusting him to charge himself with what he got and used. Our ammunition account always checked out very closely.

"Our club is also a success from a financial and social standpoint. There are three sources of finance—(1) Dues; (2) The Social and Entertainment Committee give a select euchre and dance each month in the winter, for the families and sweethearts of the members; (3) Trap or shotgun shooting in summer.

"We might add that this program has a good moral effect on our young members, causing them to mingle with older heads and tending to broaden their views on many difficult subjects that are continually coming up, also furnishing them with plenty of good, clean entertainment, that they would otherwise be seeking in places that are not fit for our young generation."

JUNIORS SETTING FAST PACE AT CRESTLINE, OHIO

ANNABELLE Hartamn, seventeen years of age and weighing ninety-seven pounds, on November 28, undertook to set a long run of consecutive bull's-eyes on the junior target. She shot at fifty feet, prone, and used a Winchester 52 rifle.

At two o'clock she had a run of 297 and then let one slip out for a "four." Two hundred thirty-eight of these were A's, fifty-three were B's, and six were C's. Were those subdivisions valued at ten, nine and eight, respectively, her score would have been 2905 out of 2970. This junior bull's-eye is one and one-eighth inch in diameter, slightly larger than the combined ten, nine, and eight rings on the senior fifty-foot target.

However you figure it, we call this good holding.

This young lady and her hard-shooting team mate, Helen Lightburn, are going to enter into the four-position matches held by our senior team, and we predict that they will be making second team very shortly and the first team within a year. Three junior boys are good enough to make several of us do art derndest to keep on our first team, now. What chance has an old man these days?

* * *

COLLEGE RIFLEMEN SET HIGH STANDARD

THE Varsity Rifle Team of the College of the City of New York has set what it believes to be a record in Intercollegiate prone rifle shooting. So far this season the team has shot five prone matches, the second of which was a practice match. It has won all of these matches, and has dropped only one point in so doing. When it is considered that two of these matches were fired shoulder to shoulder, and that one of them involved the Metropolitan Prone Championship of New York, we believe that thus far we have made a record to be proud of.

The first match of the season was a shoulder-to-shoulder affair with the Varsity Rifle Team of Columbia University, and was won by a score of 499 to 497. Columbia used telescopic sights while our team used iron, as it has done in all its matches thus far. The second match, which was only for practice, was won with a possible score of 500. Rensselaer Polytechnic was next beaten by a score of 500 to 488, while the next week Rutgers lost to us by a score of 500 to 489. In this match C. C. N. Y. turned in six possibles.

* * *

SANTA PAULA WINS NOTABLE VICTORY

ON Navy Day the rifle team of the Santa Paula, Calif., Rifle Club won a victory which probably meant more to it than any victory that the club has won in its history. On that day, the civilians with the team score of 2467 defeated the crack team of the Battleship "New Mexico" with the score of 2437, and carried away the high individual honors as well, when Atmore, captain of the civilian team, turned in a total of 319. This is the third meeting of the Santa Paula Rifle Club with the boys of the "New Mexico" since June, 1924. The sailors won the first two matches, and that is the reason the victory was so sweet to the civilians this time. Mr. E. D. Stuart, Secretary of the Santa Paula Club, is very enthusiastic about these events with the men of the fleet, saying, "The 'New Mexico' boys are a clean bunch of riflemen and it is always a pleasure for the members of this club to entertain them, not only on the range but in our homes."

* * *

212th ARTILLERY POINTS THE WAY

THE following letter from the Secretary of the 212th Artillery Rifle Club of New York City points the way for action which might well be taken by all clubs to consolidate the National Rifle Association into a great, solid body of organized riflemen in which every club member would be directly affiliated with national headquarters, would know everything that was going on, and would realize that he really belonged to the national fraternity of American riflemen.

"The members of this club have decided to unanimously affiliate with the N. R. A. as individual annual members. In order that this affiliation may be effected as soon as possible, will you kindly send me about 50 or 60 blanks? We have 90 members on the rolls, of whom about 25 or 30 are already affiliated.

"I would also appreciate your sending me a few extra price lists of N. R. A. supplies and a few extra copies of the 1925-26 Gallery Match Program.

"Thanking you in advance, I remain,

"Very truly yours,

"WILLIAM WESTON, *Secretary.*"

* * *

UNITED SHOE CLUB ACTIVE

THE United Shoe Machinery A. A. Rifle and Revolver Club of Beverly, Mass., has been very active during the fall months. On October 12, the annual Columbus Day Shoot was held, an account of which appeared in the November issue of THE AMERICAN RIFLEMAN. On Sunday, November 1, quite a number of our members accepted an invitation from the Braintree Guards Association Rifle Club to participate in a get-together shoot at their range.

The annual Thanksgiving Turkey Shoot of the "Shoe" club was held on November 21. This was an open shoot, and drew a large number of shooters from Haverhill, Lincoln, Lynn, Melrose, Reading, and Waltham. The class A and B matches called for five shots standing on the A target with 6-inch V-ring. R. H. McNeill won the turkey in class A with a score of twenty-four. There were three turkeys put up in class B as this event drew forty-nine entries. A score of twenty-three was good for a bird in this match. They went to W. S. Gibbons of Melrose, Guy Chadbourne of Haverhill, and J. T. Putnam of Reading. W. J. Murphy of Haverhill won the match on the "deer" target with a score of forty-one. The Pistol Match was open to any pistol and called for five shots at twenty-five yards on the fifty-yard Standard American Target. In this event, H. Harrison of the local club and W. J. Murphy of Haverhill tied with scores of forty-nine, and Murphy won in the shoot-off.

Miss Jennie D. MacNeill won the bird in the ladies' match with a score of forty-four. This was a twenty-five yard event. The range was opened at 10 A.M. and the shooting continued until dark. One hundred forty-five scores were turned in during the day. The Christmas shoot will be held on December 19, and the same program will be carried out.

On Sunday December 6, the "Shoe" team went to the range of the Massachusetts Rifle Association at Walnut Hill, Woburn, for an informal match. A twenty-five yard pistol match was shot in the afternoon, with four men representing each club, the "L" target was used and twenty shots per man were fired from the .45 caliber service pistol. In this match the "Shoe" team was high, with a score of 743 against 723 for the M. R. A. team. After dinner a ten-shot offhand rifle match was arranged and five men represented each club. The visitors were again victorious with a score of 218, while the home team had 208.

We spent a very pleasant day at their range with unusual weather for the month of December in Massachusetts.

On Saturday, December 12, a five-man pistol team from the Pistol Club of the Massachusetts Institute of Technology visited us for a match. The course of fire was seven shots at twenty-five yards and seven shots at fifteen yards, .45 cal. automatic pistols and the "L" target were used. The scores were United Shoe 650, Tech. 625.

An indoor rifle match is being arranged with the Arlington (Mass.) Rifle Club, to be shot during the next week or so. This will bring the team activities to a close for 1925. This has been the biggest year that the Beverly club has enjoyed in the rifle and pistol game, having shot fourteen team matches and ran three open shoots. We are hoping for bigger things in 1926.

* * *

LOCK HAVEN WANTS TELEGRAPHIC MATCHES

THE Lock Haven, Pennsylvania Rifle Club desires telegraphic team matches in the Gallery at seventy-five feet. Communications should be addressed to Mr. S. W. Wolfe, 123 Bellefonte Avenue, Lock Haven, Penna.

* * *

SHAWNEE RIFLE CLUB ACQUIRES NEW GALLERY

THE Shawnee Rifle Club, Lima, O., began its indoor gallery season on January 1 in new headquarters leased in the basement of the Askins Building. The club expects to have one of the most complete galleries in the United States. It will have both fifty and seventy-five foot ranges which can be used at the same time. Plans are being laid for a Boy Scout night each week, when members of the club will instruct the local youngsters in the rudiments of marksmanship.

Members of the William Paul Gallagher Post of the American Legion are forming a team within the club to represent their organization in inter-city shoots. The Club also plans to affiliate with the Ohio Rifle League as soon as the new range gets under way.

* * *

PISTOL MATCH WANTED

THE Pistol Team of Princeton University desires pistol matches with other college teams. Colt .45 Automatic Pistols to be used and scores to be exchanged by mail. Any college maintaining Field Artillery or Cavalry R. O. T. C. unions will be particularly interested in this open challenge. Communications should be addressed to John U. D. Page, manager, Princeton University Pistol Team 362 Cuyler, Princeton, N. J.

LONG BEACH SETS MARK FOR OTHERS TO SHOOT AT

THE annual report of the Long Beach, California Rifle and Revolver Club indicates that the club has completed twenty-four small-bore rifle and twelve service rifle matches during its 1925 program, in addition to maintaining a pistol and revolver range which is always in operation. The club secretary gives us his opinion that Long Beach has the best small-bore range in Southern California, just ten minutes' ride from the heart of the city, with unlimited facilities at 50 and 100 yards and two double-frame targets at 150, 175 and 200 yards. Plans are now under way to further enlarge the firing points so that all ranges may be used at the same time.

Through the courtesy of the Santiago Rifle Club, of Santa Ana, California, service rifle shooting is done at the National Guard Range at Orange County Park, the Long Beach shooters having joint use of the range every third Sunday during the year. The Long Beach Police Department use the club range for their pistol practice. Says the club secretary: "Some of our best members have been recruited from the police force."

A membership campaign just closed added a total of twenty-seven new members to the club. This campaign took the form of personal solicitation among the hunters and police and was augmented by window displays in the banks and sporting goods houses.

During the summer the Long Beach Club was host to the Western States Small Bore Rifle Association and sponsored a two-day match, in which there were 61 entries. Nineteen cups were given as prizes, as well as merchandise prizes.

* * *

PASS THIS ALONG TO THAT FRIEND YOU HAVE BEEN TRYING TO SIGN UP

"RECEIVED today my copy of 'Amateur Gunsmithing,' also my National Rifle Association membership cards and button, and my only regret is that I did not join sooner and that every true American is not a member of same. I note on the slip you inclosed, that there is no pay available for organizers. There should not be. The principles and aims of the National Rifle Association and what it is striving to accomplish should be all the inducement any true American should need to do everything in his power to further the aims of that organization, for, if we will just consider the past history of our country for a moment, the fact stands out pretty plain that the status of this Grand Old U. S. A. today was not caused entirely by the business ability and integrity of our statesmen, but mainly because of our citizens' ability to handle weapons, and with them keep the enemy from our doors whenever the occasion demanded.

"In the future, if there is anything I can do for the good of the organization, believe me always yours to command,

"JESS SELKIRK,
"Mokelumne Hill, California."

* * *

COLLEGE OF THE CITY OF NEW YORK

SATURDAY, December 5, the team won the Metropolitan Prone Championship of New York in a shoulder-to-shoulder match on the range of Rutgers University. This match was shot under the usual conditions of Intercollegiate prone matches, i. e., two sighting shots and ten shots for record, ten shooting with the five high to count. Solomon, Noyes, and Valentine, who have been the team's mainstays, came through with their usual possibles, the two former not having dropped a point in a prone match so far this season, and with the possibles of Lichtenfels, Feinberg, and Brause, gave C. C. N. Y. a score of 600. Main of Rutgers and Devereaux of Columbia also made possibles. The team scores were C. C. N. Y. 500, Rutgers 495, and Columbia 493. New York University, also scheduled to shoot, did not appear. This is the second time in succession that C. C. N. Y. has won this championship.

We would be glad to meet any college under the regular Intercollegiate prone conditions, any sights. Communications should be addressed to the Manager of Rifle Team of this Institution.

* * *

TRIBUNE TROPHY COMPETITION OPENS

A MATCH for the Tribune Trophy has been started in Chicago, the first competition being fired on Nov. 20, 1925. The match is divided into six stages and is open to five men, teams from all clubs in the Chicago area.

The Hamilton Club got away to a lead in the first match, turning in a score of 931, as compared with 911 for Hawthorne Team No. 1.

The team scores of seven competing teams were as follows:

Hamilton Club	931
Hawthorne No. 1	911
Irving Park	906
Hawthorne No. 2	897
Ridgeville	891
Hawthorne No. 3	828
Hawthorne No. 4	751

H. C. Monahan is high individual to date, with a score of 197. Patton is runner-up with 192, and H. C. Porter, with the same score, ranks third. We hope to have more details of this match later on.

* * *

212th ARTILLERY RIFLE CLUB

THE 212th Artillery Rifle Club of New York City wishes to book postal matches at fifty or seventy-five feet with either military units or civilian rifle clubs from any part of the country, also pistol matches at twenty yards, either with military units with the service pistol or with civilian clubs with the .22 pistol.

They would also like to shoot shoulder-to-shoulder matches at fifty or seventy-five feet with the rifle, and twenty yards with the pistol, with regiments or rifle clubs in New York City or vicinity.

Those interested should get in touch with Lieut. William Weston, Secretary, at 120 West 62nd St., New York, N. Y.

* * *

LOS ANGELES RIFLE AND REVOLVER CLUB MATCHES FOR 1926

COMMENCING with the first of the year, this club will put into competition each Sunday two handsome medals. The winner will take the medal home with him at each shoot, and will retain it as long as he can defend it. The person winning a medal three times, not necessarily consecutively, will acquire permanent possession, and a new medal will be hung up. The Club will compete in two classes, A and B, for two distinct medals. Your class is ————. Permanent possession of a medal in B class automatically puts the winner in A class.

Conditions: 2 sighters and 5 shots prone; 5 shots kneeling, 5 shots standing, no sighters; all to be fired without leaving firing point. Any rifle or sight, but no change of rifle or sights permitted in course.

The following matches are in progress or will be put into the program after the first of the year. All require 25 points for permanent possession, first place counting 5, second 3, third 2 points.

Frank Verbeck Rapid Fire Match, 2nd Sunday, 10 shots sitting or kneeling, 10 shots prone, time per 10 shots, one minute; service rifles, service sights.

W. D. Murphy Match, 2nd Sunday, 10 shots prone, 10 kneeling, 10 offhand, 2 sighters in each string, service rifles as issued, offhand, extended arm only. Prize, a service rifle.

Homer Sargent Trophy, 4th Sunday, conditions as in Murphy Trophy, any rifle, metallic sights, any offhand position.

Crossman Small Bore Trophy, 4th Sunday, 10 shots prone, any small bore rifle, any sights.

E. C. Price Offhand Trophy, 1st Sunday, 10 shots offhand, any rifle and sights.

I. O. Gardiner Prone Trophy, 3rd Sunday, 15 shots prone, any rifle and sights.

Mr. Price announces five special prizes, consisting of Belding and Mull cleaning rods, to be hung up in the first five Murphy Trophy shoots for the high man in each. Only one rod to any one man. Conditions, Class A men handicapped 15 points. Any rifle not over 9½ lbs. may be used, but will be handicapped 5 points if not the service arm. Scopes and aperture front sights barred. Only the service rifle may be used in the Murphy match, but sporters, handicapped, will be allowed in the special Price event for rods.

Cutting Trophy, 2nd Sunday, same conditions as Murphy match, any rifle not over 10 lbs., any position offhand.

The Verbeck, Sargent, Murphy, and medal trophies are new matches just opened.

Every Sunday in December will be devoted to qualifying members for the Government Marksmen, Sharpshooter, and Expert decorations, and qualifying for the 1926 supply of Government Springfield ammunition, which depends on number of members qualifying for the medals furnished by the War Department. Service rifles only. Ammunition furnished at the range. You can borrow a rifle if you do not own a service arm. Members are urged to provide themselves with service rifles for team matches, tryouts, and qualification shoots requiring these weapons. Team matches with Army, Navy and other civilian club teams will be arranged during 1926, including trips to other ranges. Such matches usually require the service rifle.

Come out and get your Government decoration. Coaches and help will be furnished.

THE EXECUTIVE COMMITTEE.

OHIO SMALL BORE CHAMPIONSHIP MATCHES

WILL be held at Columbus, Ohio, February 20-22, 1926, on the ranges of the Ohio State University.

These matches will afford the rifle fan the greatest diversity as well as the grandest opportunity for display of skill that can be arranged on fifty and seventy-five foot ranges covering a period of three days. The time has been given special consideration so as to make what is practically three holidays coming consecutively so that shooters can attend the entire program without interfering with their regular occupations.

The various stages are so arranged that one can enter any single match or part of a match if he so desires, yet the shooting is so arranged that each match and part of a match dovetails in such a way as to make a complete program.

A very strenuous effort is being made by those in charge of this event to secure prizes in the form of cash and merchandise that will be well worth having, and the distribution will be in such a manner that both the expert and tyro will feel well repaid for their efforts.

All of the individual matches and parts of matches will be open to every one regardless of residence or marksmanship standing. It is obvious however that only shooters from Ohio will be eligible to represent Ohio in the team matches with the Province of Ontario, Canada and the State of Iowa.

Match No. 1

Composed of teams of twenty men each, representing the Province of Ontario, Can. and the State of Ohio.

Twenty shots per man, prone position, iron sights on seventy-five foot range, all scores to count.

Team personnel representing Ohio determined by qualification, shooting twice over the course (forty shots) twenty high men from Ohio to compose the team.

This match will be open to any one and prizes will be distributed according to individual standing regardless of place of residence but only Ohio men will represent the team.

Qualifying tryout for this match will begin Saturday, February 20 at 9 A.M. and end at 1 P.M. Sunday, February 21. The match will be shot at 2 P.M. Sunday, February 21. The X ring will be used and counted in deciding ties in this match.

Entry fee $1.00. Prizes: Cash (and merchandise if available).

Match No. 2

Composed of teams of twenty men each representing the State of Iowa and the State of Ohio.

Ten shots per man in each position, standing, kneeling, sitting and prone. N. R. A. regulations to govern. The scores of the ten high men to count. Any sights, distance fifty feet.

Team personnel representing Ohio determined by qualification shooting twice over the course (eighty shots) twenty high men from Ohio to compose the team.

This match is open to any one under same conditions as Match No. 1. Qualification may be shot at any time after 9 A. M. Saturday, Feb. 20 and will end at 1 P.M. Monday, Feb. 22. The match will be fired at 2 P. M. on Monday, Feb. 22 on the fifty foot range.

The X ring will be used and counted in deciding ties in this match.

Entry fee $1.00. Prizes: Cash (and merchandise if available).

Match No. 3

Columbus Dispatch Tournament. This match will be composed of five subdivisions or parts, and will be decided by the scores made in the Iowa-Ohio qualifications.

a. High score standing. b. High score kneeling. c. High score sitting. d. High score prone. e. Aggregate high score made in all positions.

This match is open to any one without conditions. It may be fired at any time between 9 A.M. Saturday, February 20, and 1 P.M. Monday, February 22.

Entry fee $1.00. Prizes: Cash (and merchandise if available) for each subdivision.

X ring will be used and counted in deciding ties in each of the various parts of this macth.

Match No. 4—Ohio State Championship

This match will be determined by the high score made in the qualifications for Ontario and Iowa-Ohio Matches.

The X ring will be used and counted in deciding ties in this match. The entry fee will be $1.00 and prizes will consist of cash (and merchandise if available). A special prize will be offered to the high shooter from Ohio designating "Championship of Ohio." Other than this special prize the match will be open to any one and cash and prizes will be distributed according to scores made.

Match No. 5—Unlimited Re-entry at Fifty and Seventy-five Feet

This match is arranged for practice purposes, sighting in, etc. No other shooting for these purposes will be permitted. On the fifty foot range any sights may be used and each position will be made a separate match. On the seventy-five foot range iron sights only may be used. Prone position.

Re-entry cards may be fired on either range at any time targets are available beginning at 9 A.M. Saturday and closing when the range is closed on Monday evening, February 22.

The X ring will *not* be used nor counted in this match. All ties will have cash prize divided equally. The entry fee will be twenty-five cents per card and prizes will be *cash*. On the fifty foot range, five high cards in each position will be counted but on the seventy-five foot range one set of five high scores prone position only will be counted.

Dr. M. E. McManes, Piqua, Ohio.
Chairman Match Committee.

* * *

VANCOUVER RIFLE CLUB HAS EXCELLENT RECORD

THE annual report of the Vancouver, Washington Rifle Club indicates what a live wire organization may accomplish in the face of difficulties. Early in 1925 the club was forced out of its old gallery and found one of its members who was willing to donate the use of a basement in one of his properties. The club promptly went to work and has constructed a five-target 50-ft. range complete, including two electric suction fans to carry off the smoke and fumes. The range is used Monday, Wednesday, and Friday nights, and Sunday morning for rifle shooting for men only. Tuesday night, members of the club bring in their women folks, and Thursday night the .22 caliber pistol sharks are out.

The club entered two teams in the N. R. A. Civilian Club Championship and had twelve different men in the various individual matches, these in addition to postal matches with other clubs and an interesting series of classified club competitors.

The service rifle range used by the club is at Vancouver Barracks. Road conditions from the range to Vancouver have been very bad. Nevertheless, out of a membership of seventy-four, forty-four of the club members shot over the outdoor ranges at some time during the season, the average total attendance being about twenty-five members. The club members handled their own pit detail work.

On August 2 the Vancouver Club fired record qualification with twenty-nine members participating, out of whom twenty-seven qualified. Mr. W. A. Shwarz, Secretary of the Club, says that 1926 looks as though it would be a fine year for the Vancouver Club.

A State Association Shoot has been allocated to the Vancouver Club and they are inviting civilian clubs, National Guard and other teams from the State of Oregon to participate, as Portland is only eight miles from Vancouver. They anticipate forty teams of six men each at the matches, which will be fired on May 30 and 31.

The Chamber of Commerce of Vancouver is donating a cup to the winning team for annual competition which will be known as the Vancouver, Washington Cup, while the President of the Club, Mr. Dickson, is donating a cup for the high man over the slow fire stages of the course, and Mr. Shwarz himself donating a cup for the high man over the rapid fire stages.

* * *

SCORE-BOOK CLOSED FOR ANOTHER OLD-TIMER

EARLY in December, Milan William Bull, seventy-nine years of age and a rifleman of the old school, died at his home in Springfield, Mass. Mr. Bull had been employed at Springfield Armory for years, and at the time of his death was a pensioned employe of the Armory. Mr. Bull's shooting career began in 1867. At that time a statement appeared in print to the effect that the old Springfield .45 couldn't "hit a flock of barns." Colonel Benton, then the Commandant of the Army, called upon William Bull and his brother, Freeman R. Bull, as well as some of the other Armory employes, to give the rifle a real tryout. The results were considered highly satisfactory and the Bull brothers were launched on a rifle shooting career which saw them as members of the Massachusetts National Guard Team at Creedmoor in 1886, 1887, 1888 and 1889, which won the Hilton Trophy and Soldier of Marathon Trophy those four years.

In 1887 at the so-called World's Championship Matches in Chicago, the same team, with the Bull brothers as its outstanding marksmen, again carried off all honors and the brothers later went to England twice with American teams which competed in matches at Bisley.

There are but few of the old-timers left who personally remember the exploits of M. W. Bull, but to him and the others who shot with him, the present generation owes a debt of deepest gratitude.

THE DOPE BAG

A Free Service to Target, Big Game and Field Shots—All questions answered directly by mail

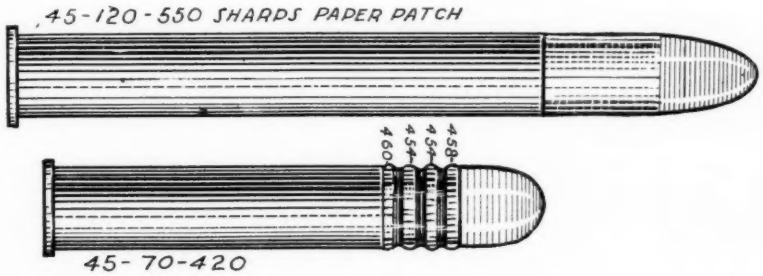
Rifles and Big Game Hunting: Major Townsend Whelen **Pistols and Revolvers: Major J. S. Hatcher**
Shotgun and Field Shooting: Captain Charles Askins

Every care is used in collecting data for questions submitted, but no responsibility is assumed for any accidents which may occur.

The .45-120 Sharps

By O. Royce

IN the November 15 issue of our publication I read with great interest Major Whelen's response to the inquiry of "J. P." regarding the .45-120 Sharps rifle. These old smoke sticks are a source of unending pleasure to me, and I never let a good one pass by without trying it out thoroughly. I recently acquired a Sharps Creedmore .45-120 in faultless shooting condition from Mr. W. H. Riddle, and I feel that a short account of my experiences to date with this weapon will be of interest to others of the clan.



Finding it almost impossible to get the 3¼" cases for which the rifle is chambered, Mr. Riddle set about to perfect an accurate load using the .45-70 cases. These cases are over 1⅛" short for the chamber, and any fixed ammunition made up in them in the ordinary way produced such poor accuracy that the rifle was worthless.

The problem was solved in the following way: Knowing that the bullet was so much smaller in diameter than the chamber that it not only allowed the escapement of gas around the bullet before it entered the throat of the rifle, but also allowed the bullet to drop out of line with the axis of the bore, he made a bullet mold to cast bullets making a gas seal in the chamber of the rifle before bullet was fired.

A .45-405 mold casting a bullet .454 in. was used. The first band above the base band was cut out to a size about .001 larger than the outside diameter of the mouth of the case, and the upper band enlarged to the same diameter.

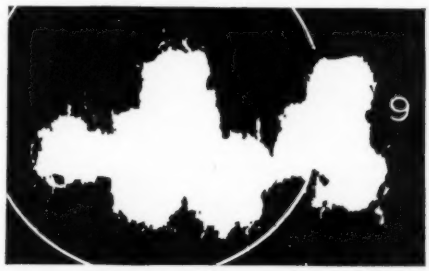
In loading, the bullet was seated in the mouth of the case up to the second band (the lower enlarged band) and forced into the chamber by pressure on the base of the case. Bullet is so tight that it requires about all the pressure one can exert with the thumb to push the shell up to where the breech block can be closed. The load is made up on the same principle as the .22 long rifle. While it causes the bullet to jump about ¾" before entering the rifling, its accuracy is a surprise to all who have seen the old rifle shoot. Ten-shot groups of one inch at sixty yards (best shooting distance at turkey matches here) and the regular thing. I witnessed Mr. Riddle shoot a fifteen-shot group on the 25-yard N. R. A. target at 60 yards that cut one jagged hole in the target. Every bullet hole could be touched with a quarter laid on the center of the group. Load 55 grains FFG black powder in old .45-70 cases with above-described bullet.

The old rifle has been made to shoot and has beaten the finest modern match rifles in this community in open competition in the type of matches in which none but the best of rifles and marksmanship have a chance. I shall try it at 200 yards, and if it works as well as I think it will, I shall use it for offhand shooting at that range.

Since writing the above I have had a chance to fire one ten-shot score at 100 yards, resting the gun with fore-end on padded rest. Load—the above-described bullet using 50 grains bulk Schuetzen powder in .45-70 cases.

The group is inclosed. While it is probably a lucky group, it serves to give an idea of the accuracy of the load and the possibilities of the rifle.

Many of these fine old rifles can be made to provide many hours of keen enjoyment to the true gun "crank," moreover the user of such a gun need not feel in the least handicapped by their use, provided the right fodder is given them.



Ten shots at 100 yards with a Sharps Creedmore .45-120-550. Sights Vernier and aperture, fore-end and elbow rest, set trigger used. Light good with little wind. Load fifty grains bulk, Schuetzen powder, 420 grain special bullet, fitted to chamber in .45-70 case.

CHANGING BULLETS

I WOULD like to ask your advice concerning pulling bullets from the regular service .30-06 ammunition made at F. A. 1918.

And replacing with 180-grain bullets with the same charge of powder, would this raise the pressure too high to be safe?

Do you think there will be heavier bullets made for the .300 Savage? A. J. O.

Answer (*by Major Whelen*). The bullets in .30-06 war-time ammunition may be pulled from the cases without injuring either the bullet or the case, by using the Belding and Mull bullet puller. But if you wish to load the cases again with 180-grain bullets you must reduce the powder charge to not to exceed 46 grains weight, as the full service charge of this Pyro D. G. powder would give excessive and dangerous pressures with a 180-grain bullet. This charge of 46 grains of powder will give about M. V. 2500 f.s. with the 180-grain bullet.

I do not believe that any of the ammunition companies are contemplating putting out the .300 Savage cartridge with a heavier bullet.

A SUCCESSFUL TRIP

MY wife and I have just returned from spending forty-nine days in the wilderness of Alberta. While we had very little pleasant weather; in fact very little weather in which hunting was possible during our stay in the woods, we secured all the game we went after, with the exception of one deer. My wife, who had never before killed as much as a rabbit, succeeded in killing the first bighorn ram she shot at while it was running at a distance of over 200 yards. Her ram had a 15" base with 8 annular rings and a complete curl,—a very pretty little head. I got my sheep out of the same band. His head measured almost 16½" at the base and he had a curl of over 37". Both horns carried out very well and were well roughened and quite symmetrical. We each got a small billy. Mine had 7" horns and my wife's had 6" horns. We did not run into any big billies until after we had each killed our goats. My wife did not succeed in getting a deer, but I killed a 17-point mule deer with a spread of over 26". My moose had a 54" spread with a 14½" palm, and my wife killed one with a 42" spread and 20 points. Her head is the most even moose head I have ever seen, although, of course, it is not large.

My 7 mm. Mauser which you were so kind as to help me to select, worked beautifully. I used 139-grain bullets in it entirely and managed to kill everything I shot at at less than 300 yards. I had long shots on all my game except my moose this year; that is, long shots for me,—none of them under 200 yards except on my moose. My wife used a 6.5 Mannlicher Shoenauer with 160-grain Western soft point bullets. I was quite disappointed in the action of that cartridge. I have used the 140-grain bullet from that gun and have found it to be an excellent killer, but the 160-grain bullet did not mushroom particularly well. None of the game hit with it was stopped at the first shot, or anchored. It penetrates, to my mind, not wisely but too well. That seems to be the trouble with it. For instance: Mrs. Hopkins shot a big bull moose broadside at about 30 yards. She hit it a few inches back of the shoulder and through the lungs. The bullet hit one rib near its point of entrance and went entirely through the moose. I could hardly get my little finger into the hole where it had come out. The moose was not affected by this shot whatever; in fact, the guide claimed that my wife did not hit it, and they did not find the hole until she had hit it at several other points in its anatomy and killed it.

From my observation of this bullet on game this fall, it seemed to me that the jacket was either too hard or else not enough lead was exposed to give the bullet good expansion. I think that hereafter I shall stick to hollow point bullets rather than soft nose bullets because all of the game I have killed has been killed with the former, and I have never had an animal go farther than 15 or 20 yards after being hit, except one deer which was shot through the hams without having any of its bones broken by the bullet. In killing the above-mentioned game I have used Savage 300, 6.5 Mannlicher with a 140-grain bullet, Springfield with a Western 180-grain bullet, and 7 mm. Mauser with the 139-grain Western bullet. The game killed this way by me has consisted of mule deer, white tail deer. goat, sheep, moose, and elk, and a good many of my first shots have not been particularly well placed because I am not a good shot.

You will be glad to learn that I could find no indications whatsoever of disease among the moose in that section of country in which we hunted. At times we were within 40 miles of Nordegg. I saw a great many moose,—well over 150. I had a chance to examine a lot of them closely and could find no indication of skin disease on any individual. My wife and I each killed a bull, and they were both in fine condition both inside and outside. I inquired among the guides and trappers in that vicinity and could learn of no diseased animals. At the office of the Game Commissioner of Alberta I was told that they had a report similar to the one you gave me, but that after following it up they could find no basis for it. We found only one moose carcass, and that was the carcass of a small moose killed probably two or three years ago this fall, and of course it might have been killed by a grizzly as there are plenty of grizzlies in that country. I did my best to discover traces of disease among these animals, and was very much gratified at finding none whatsoever. I am sure you will be pleased to learn of the result of my investigation. D. S. H.

Answer (by Major Whelen). I have your letter of October 22. Please excuse my delay in answering. I have been extremely busy. You seem to have most wonderful luck on your hunting trips. I quite envy you in your ability to take them, and with your wife, too. Once again you have gotten a wonderful sheep head. Many men have hunted sheep all their lives and have never managed to get a 16-inch head. I am so glad that you did not find any evidence of disease among the moose. One hates to think of such a thing among our game. That must be a great moose country. Never before have I heard of any one seeing so many moose on one trip.

I am glad also that your 7 mm. Mauser performed so well. Since I began to recommend this caliber about three years ago I must have had fifty letters from sportsmen who have used it successfully on all of our big game, and in not a single case do they speak of it with anything but the greatest enthusiasm. But I am rather puzzled about the behavior of the 6.5 mm. Mannlicher. You know that this rifle has been used by Englishmen on big game all over the world for over thirty years with most excellent results. Also they all recommend a bullet with just a pin point of lead exposed at the point—that is, they think that the ordinary soft point bullet mushrooms too readily. The Western Cartridge Company made up their 160-grain bullets with this point in view. But the Englishmen almost invariably use rifles with full 26-inch barrels, giving 2300 f.s. muzzle velocity. Most probably your wife's rifle had only an 18 or at the most a 22-inch barrel, and hence the velocity was so much diminished that the bullet did not mushroom as much as might be desired. It might be well hereafter to use one of the other makes of ammunition in that rifle, having a bullet with more lead exposed at the point.

Thank you very much for writing me in such fullness as to the details of your delightful hunting trip.

SHORT BARRELS

I HAVE been a subscriber to THE AMERICAN RIFLEMAN for about five years, and am also president of the Onondaga Rifle Club, Inc. Up to the present time have not availed myself of the Dope Bag, but now desire some expert advice.

Have a star-gauged Springfield which I use on chucks and for target shooting. Quite often during the summer I take trips on the train and like to take the rifle along in case I get a chance at some chucks. The gun is rather long and unhandy to carry on the train in a full length case, and I am wondering if I could cut the barrel down to 20 inches and use the rifle as a take-down by taking out the guard screws and removing the stock. By doing this I could get the gun in a case 28 inches lohg. Now for the questions:

First, would shortening the barrel, which is in its original condition except that the rear sight base has been removed, to 20 inches injure the accuracy in any way. I expect the velocity would fall off slightly, but would this be noticeable to any but an expert?

Second, if the gun were used as a take-down, as suggested above, would there be any change in elevation from time to time providing the guard screws were always screwed up tight? Rifle is equipped with Lyman No. 48.

Third, if cutting the barrel to 20 inches will not injure the rifle, will you please recommend a load of powder for both 110 and 150-grain bullet. Have been using the 110-grain and 50 grains of du Pont No. 16 on chucks the past summer, and like this load very much, as I have never had a bullet glance when using it. Presume in a shorter barrel this load could be cut down some. How would about 35 or 40 grains do?

I restocked this rifle by following the rules laid down in "Amateur Gunsmithing" and certainly have a fine, well-fitting stock. Have a copy of the "American Rifle" which I have been reading for about four years, and every time I pick it up I find something new and interesting.

Regarding my Springfield, the barrel has a groove diameter of .3085 and land diameter .3003, these dimensions being uniform for each inch of barrel. This is of course slightly oversize, but she sure does shoot. Am very much in love with the rifle and do not want to do anything to injure the accuracy, and am therefore writing for your advice. G. H.

Answer (by Major Whelen). If you cut the barrel of your Springfield off to twenty inches I doubt if you will be able to notice any decrease in accuracy unless you are a very expert shot, and then probably not until you reach a range of 500 yards. There is, of course a very slight decrease in accuracy, due mostly to the shortened sight base. There is a decrease in muzzle velocity of about 100 f.s., with louder report and slightly increased recoil. But the 20-inch barrel makes the rifle much handier, and where one wants to increase this feature the shortening of the barrel is advisable.

The taking down of the rifle by removing the guard screws is possible, and it will do no harm to do it once in a while, provided you do not make a steady practice of it. Occasionally it may change the zero in elevation and windage. You must carry a big, strong, screw driver with blade shaped exactly for the screw slots, and set the screws up just as tight as you possibly can each time. If the guard screws be the least bit loose the rifle will shoot very raggedly. The danger is that continued taking down in this way will wear the guard screws on their seats, and particularly will wear or enlarge the seat in the stock in which the recoil seat of the receiver fits. thus causing the barrel and receiver to gradually settle farther back in the stock, to a different position, perhaps after a long-continued wear causing the stock to split. However, I would not hesitate at all to take one of my own rifles down this way occasionally if I wanted to store it in a small space.

With the 110-grain bullet a charge of 50 grains of du Pont No. 16 powder is a very excellent load. You can also probably use as low as 35 grains of this powder and have the powder still burn well. But below 35 grains you will probably get much unburned powder, and moreover the powder fouling may be rather corrosive. The maximum charge recommended by du Pont is 55.5 grains of No. 17½ powder, M.V. 3300 f.s. in 24-inch barrel.

With the 150 grain Western open point Lubaloy bullet you can use as high as 52.0 grains of No. 16, M.V. 2950 f.s., or 52.5 grains No 17½, M.V. 2950 f.s., or as low as about 32 grains of either powder and still have the powder burn fairly well. But if I were you I would not exceed 48 grains of No. 16 or 49 grains of No. 17½, either of which will give about M. V. 2800 f.s. in 24-inch barrel, or about 100 f.s. less in your 20-inch barrel.

We have never been able to tell that there was any difference whatever in the shooting qualities of barrels running from .3080 inch to .3086 inch groove diameter. Incidentally, it just happened that the most accurate Springfield on record had a groove diameter of .3086 inch. The chamber of the barrel probably has more influence on accuracy than the very slight differences in bore and groove diameter. The star-gauged record of your rifle barrel indicates that it has all the earmarks of fine accuracy.

I am very glad to know that the little book "Amateur Gunsmithing" is doing some good, and that you have succeeded so well in stocking your rifle.

A .40 CALIBER REMINGTON

I HAVE a .32-20 Winchester single shot with the large size action. Would this be suitable, if the firing pin was bushed up, for the fitting of a Krag barrel? The action is in remarkably good condition.

If not suitable for such ammunition, could I have it rebored for some cartridge larger than .32? It has a number five barrel and Niedner does this work for $20.00. .38-55 is about the largest cartridge I am likely to get barrels for, is it not?

One of my Remington Hepburns is marked ".40-2½." Are these cartridges obtainable any more? I can't seem to get cartridges here that will work. L. T.

Answer (by Major Whelen). I have received your letter of November 16. The heavy action of your .32-20 Winchester single shot rifle is perfectly suited to having a barrel for the .30-40 Krag cartridge fitted to it. It should be fitted with the Mann-Niedner firing pin. Also I would very strongly recommend that you have it chambered for the pointed bullets. You can thus use all the modern Krag factory loads with the greatest accuracy, and can reload with any or all of the bullets designed for the Springfield. The only trouble with the old Krag is that its barrel is throated for the long bearing, old fashioned 220 grain bullet, and it does not give the finest accuracy with any of the modern bullets, and the old bullets are almost impossible to obtain now. Practically all 220 grain bullets now made have a reduced diameter forward of the case so they will chamber in the Springfield.

The Niedner Rifle Corporation, Dowagiac, Mich., is the only firm I know of equipped to both fit the firing pin and make and fit the barrel. Also I understand they can make barrels for .38-55, .405 Winchester, and .45-70.

I think your Remington Hepburn which is marked ".40-2½" is chambered for either the .40-70-330 Sharps Straight, or the .40-70-330 Ballard cartridge. I think these two cartridges are interchangeable. They are the only .40 cal. cartridges having a case length of 2½ inches, and incidentally I consider them the best of all the .40 caliber cartridges. So if your barrel is in good condition you probably have a most excellent rifle. Write to Frank J. Kahrs, Remington Arms Company, 25 Broadway, New York City. He can tell you if this is the correct cartridge, and he can also probably tell you where you can get some cartridges or primed cases. If not, write to Winchester. Both companies used to make them. The cases stand reloading almost indefinitely if properly cared for, and a supply of 100 good cases with reloading tools and bullet mold should last you a lifetime.

THE FIALA GUN

COULD you give me any information about the Fiala Combination Rifle and Target pistol advertised in THE AMERICAN RIFLEMAN by Fiala Outfits, Inc., R25 Warren St., New York? Is this the same outfit described by Major Hatcher in THE AMERICAN RIFLEMAN several years ago, and is it still being manufactured? If not, do you think it would be a good buy at the price asked in view of the fact that there are probably no repair parts to be had in case of a piece breaking?

Recently in rebuilding a Stevens 414 I had to heat the hammer in order to make some changes I wanted. Can you tell me how to treat it at home either to case-harden it or temper it so that the trigger pull will remain the same and not become either too hard or too light by the sear notch wearing?

How do you calculate the energy of a bullet when the caliber bullet, weight, and velocity are known? C. H. K.

Answer (by Major Whelen). The Fiala Combination Rifle and Target pistol is in appearance somewhat like the Colt .22 cal. automatic pistol, but is not automatic in its action, that is, the breech block must be pulled back for each shot. It has a detachable shoulder stock, and also detachable barrel. There are two barrels, one a pistol barrel about six inches long, I think, and the other a rifle barrel about eighteen inches long. It handles the .22 cal. Long Rifle cartridge, and probably gives the same fine accuracy that all the light repeating rifles for this cartridge give. I understand that it was designed as an all-round rifle and pistol, which could be packed in a small space and taken with one's outfit on a big game hunt as an auxiliary to the larger rifle for shooting grouse, rabbits, etc. As such it seems to be a very handy and suitable weapon.

I also understand that the concern who were making these weapons for Mr. Fiala, failed after they had completed several thousand rifles, and that it is these rifles which the Fiala Outfits are now selling. I do not know if they have spare parts on hand for repairs, but you can probably find that out by writing them. In an emergency I should think that any good gunsmith could make ordinary repairs.

Regarding the hammer of your Stevens 414 rifle, I think you had better let it alone. I don't believe the wear will amount to much. The proper heat treatment depends upon the kind of steel it is made of, but probably heating it to a dull red and then quenching in oil would render it much harder.

To calculate the energy of a bullet,—multiply the velocity by itself (that is, square it), then multiply by the weight of the bullet, and then divide 450.240 into the result. That is all. The caliber makes no difference.

7 MM. OR .30-'06

AS a subscriber to THE AMERICAN RIFLEMAN I would very much appreciate your advice on a new rifle. I have a Mauser action in very fine shape and would like to get a barrel and stock it myself, this being the only way in which one may obtain a really good rifle at a moderate cost. Have used nearly all calibers up to and excepting the .30-'06, also 8 mm. which I found very satisfactory on moose but lacking in fine accuracy. For a long time my ideal of a rifle has been the 7 mm. but now I'm somewhat doubtful of its ability to make clean kills on moose. What is your opinion?

I used to be a small bore enthusiast, strong for .256 Newton 6.5 mm. Mann, .250-3000 Savage but hate to let wounded game get away.

There are three calibers that stand out (in my estimation) above all others of their class, i.e. 7 mm. .30-'06 and .35 Whelen. My targets will be from moose and bear down to coyotes and "dead" targets. What would you advise?

What do you think of the .276 British 160 gr. and 2950 f.s.? Do you know the condition of the Model '17 Springfield as advertised by Bannerman? Could they be rebored satisfactorily for .35 Whelen? A. M. P.

Answer (by Major Whelen). The 7 mm. cartridge is a most excellent one for all American big game when in the hands of a skilled game shot who can place his shots fairly well. Using the 175 grain Western soft point bullet M. V. 2300 f. s. it will kill moose well if the bullet be fairly well placed in a vital spot. Nevertheless the .30-'06 with 180 or 220 grain bullets is a much better moose rifle. You can not possibly beat the .30-'06 cartridge, and one never makes a mistake in selecting it. Griffin and Howe, the Hoffman Arms Company, or Niedner Rifle Corporation can all fit very excellent barrels to your Mauser action for either the 7 mm. or .30-'06 cartridge. I would advise the .30-'06.

I am not familiar with the .276 British cartridge. Have merely seen bullets and had a description of the cartridge. I think it is still in an experimental stage as a military cartridge.

I think those U. S. Model 1917 rifles sold by Bannerman are in very good condition—practically new. But they can not be rebored to .35 Whelen, for the barrel is much too thin—much thinner from a point 3 inches ahead of the breech and forward, than the Springfield barrel. The Springfield can be rebored to .35 Whelen by Griffin and Howe. Don't know the price, probably about $20.00.

A SPECIAL KRAG

PLEASE give me your opinion in regard to the following: Krag rifle with No. 4 barrel (by Niedner) chambered for the Krag cartridge and bored with a 14-inch twist; using a bullet weighing 180 to 200 grains, about 35 to 40 grains of Schuetzen powder. Lead bullet. Or would 16-inch twist be better? Or should I stick to my .32-40 Schuetzen? I have your book "American Rifle" and I enjoy it very much. J. W. B.

Answer (by Major Whelen). I presume that what you are after is an extremely accurate rifle and cartridge, using a lead bullet, for ranges up to 200 yards.

There are many lead bullets, smokeless powder loads which can be used in Krag, Springfield, or even .32-40 rifles which will regularly give groups running around 6 to 8 inches at 200 yards, or 3 to 4 inches at 100 yards. The bullets should be cast of a hard alloy, and should be from .001 to .003 inches larger than the groove diameter of the bullet. The necks of the cases must be resized and expanded to fit the bullets accurately. The bullets must be seated with quite a few of their lubricating grooves extending outside of the case so that the bullet will fit snugly up into the bullet seat of the chamber without any jump to take the rifling. The powder charge must be smaller than you evidently imagine from your letter. About 12 grains for 150 to 170 grain bullet in .30 caliber is the maximum for du Pont No. 80 or No. 75 powders, which are the best powders. Larger charges tend to fuse the base of the bullet, and particularly larger charges of No. 80 powder tend to set up excessive pressure in the base of the cartridge cases, giving cases swelled at the base, as well as poor accuracy. The handbooks of the reloading tool companies describe a number of excellent bullets of this type, and the proper powder charges for them.

In the .32-40 perhaps a little better accuracy can be obtained from the Hudson bullet, described in the old Ideal handbook. This bullet, however, requires that the rifle barrel be specially throated with a bullet seat to receive this bullet which is loaded ahead of the shell.

Decidedly the best accuracy that has ever been obtained from a lead bullet seated in the case was had by Mr. Leonard J. Miller of the Brooklyn Rifle Club at the Metropolitan Rifle League competition held in New York during January to March 1922. The range was 100 yards, and the target the 100 yard small bore target with 2-inch 10-ring. 430 shots were fired by Mr. Miller, resulting in 411 tens and 19 nines. The average score per target was 99 7-10. Mr. Miller used a Springfield rifle having a regular heavy match barrel made by Winchester, with regular chamber for .30-'06 cartridge. The bullet was the Squibb-Miller 170 grain. The first four bands of this bullet measure .301", which causes them to ride on the lands of the rifling. With the fifth band the bore sealing process begins, its diameter being .310" or .002" larger than the grooves. The sixth band is still larger, namely .312", and the last or bottom band measures a full .314". The length of the bullet is just a little less than an inch, and it is seated in the mouth of the case only to the depth of the base-band. I think it was cast of 1 part tin to 10 parts of lead. The powder charge was 12½ grains of du Pont No. 80 powder. I think that you will find that this combination will give you the very best accuracy that you can possibly obtain from lead bullet, firing the bullet from the case. The Squibb-Miller bullet, and molds for it can now be had from Belding and Mull, Philipsburg, Center Co., Penna.

You might be able to obtain similar accuracy from a heavy Niedner barrel in Krag action, but undoubtedly it would take a lot of original experimental work to determine just the right bullet and charge. Also I think that Niedner chambers all his barrels with very tight chambers at the neck for metal cased bullets, and that these chambers will not take cartridges which have oversized lead bullets seated in their necks. The oversized lead bullet seems to be absolutely essential for accuracy, therefore you don't want a tight chamber.

The Gunowner's Manual

Amateur Gunsmithing

BY

Major Townsend Whelen

Essential to the man desiring an individual weapon; valuable to every owner of a rifle, pistol or shotgun, and ready for immediate delivery.

A comprehensive boil-down of gunsmithing methods adaptable to the home shop and tool kit.

Since its appearance as a serial in THE AMERICAN RIFLEMAN, "Amateur Gunsmithing" has been materially enlarged and elaborated. There are additional chapters, including discussions on repairs to revolvers, pistols and shotguns. An exhaustive appendix has been added containing special information upon methods of dismounting and assembling the mechanisms of the better known hunting and military arms, the removal of metal fouling, the making of sulphur casts and tables of barrel dimensions which will be found invaluable to the amateur gunsmith.

The volume is substantially but attractively bound in buckram, is adapted to ready and convenient reference, and contains 175 pages of real dope from a man who knows his stuff.

Price, Postpaid, $2.00
To Members of the N. R. A. a discount of 25% is given.

BOOK DEPARTMENT
THE AMERICAN RIFLEMAN
1108 Woodward Bldg. Washington, D. C.

National Endorsement by Experts

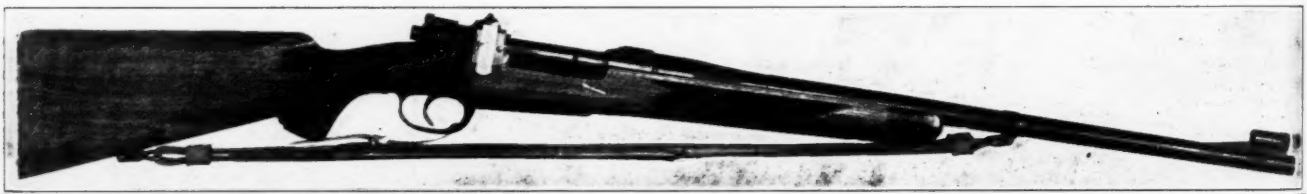
Chloroil, the alkali solvent, does what oil won't do—dissolves the primer salts. It is the only solvent which will do this. It is used by the U. S. Navy and Marine Corps, at West Point, and was part of the official equipment of the successful American Olympic Rifle, Pistol and International teams. Chloroil Solvent also has the official endorsement of the National Rifle Association of America.

The Stazon Kit

Chloroil comes packaged in the attractive Stazon Kit with its three companion products, Stazon Gun Oil, Stazon Gun Grease, and Stazon Rustoff. The Stazon Kit contains everything necessary for the care, cleaning and preservation of your gun. Send $1.00 and your dealer's name for the Kit, or 35c in stamps for Chloroil Solvent alone.

Gun Cleaning Headquarters

CONVERSION PRODUCTS CORP.
4th & Brown Sts. Philadelphia, Pa.



.300 MAGNUM

Our .300 MAGNUM rifle is becoming increasingly popular with American riflemen who demand the utmost efficiency in their weapons. This cartridge, using the 220-grain bullets of modern design, develops a velocity of 2532 foot seconds and a muzzle energy of 3132 foot pounds. In this and the other loads listed below, the accuracy is remarkable and recoil and pressures very low.

Ballistics

150 gr. bullet	M. Velocity 3149 f.s.	M. Energy 3303 f.s.
180 gr. bullet	M. Velocity 2853 f.s.	M. Energy 3256 f.s.
200 gr. bullet	M. Velocity 2650 f.s.	M. Energy 3119 f.s.
220 gr. bullet	M. Velocity 2532 f.s.	M. Energy 3123 f.s.

This rifle is built in weights from 8½ to 9 pounds and in barrel lengths from 24 to 26 inches. For maximum efficiency combined with ease of handling, we recommend a weight of 8¾ pounds with 24-inch barrels.

Sporting Springfields

For the sportsman who does not require such a powerful weapon, we recommend the remodeled Springfield as the all-round rifle for American game. Our long experience and splendid equipment have made us preeminent in turning out the finest "sporters" made.

234-240 E. 39 St. **GRIFFIN & HOWE, Inc.** ***New York City***

(RIFLE MAKERS)

3x and 5x WINCHESTER 'SCOPES

New and Complete

3x or 5x 'Scope—List	$36.00
No. 2 Rear Mt. & Base—List	4.30
Front Mt. & Base—List	1.80
Total	$42.10

Complete
$17.50
P. P. and Insured
(Save $24.60)

New Catalog—Ten Cents

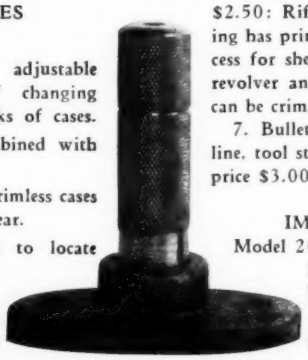
W. STOKES KIRK, 1627 N. 10th St., PHILADELPHIA, PA.

1926 B. & M. IMPROVEMENTS

Reloading Tools

NEW FEATURES

1. Prices Reduced.
2. Priming Punch adjustable eliminating necessity of changing punches when sizing necks of cases.
3. Decapper head combined with shell resizing head.
4. Extractor plate for rimless cases hardened insuring long wear.
5. Tapered pins used to locate heads on main rod, insuring accurate alignment.
6. Bullet Seaters. Price reduced: Revolver sizes $2.50: Rifle sizes $3.00. Base casting has primer hole for safety and recess for shell head on reverse side so revolver and tubular magazine shells can be crimped or not as desired.
7. Bullet Sizer—new tool, straight line, tool steel die (not a lubricator), price $3.00.



IMPROVEMENTS

Model 26 Re- and De-Capper and Shell Neck Re-Sizer Combined. Price $7.50.

For added cartridges, per caliber, $2.00.

BELDING & MULL
20 Oscola Road : : : Philipsburg, Pa.

NEIDNER BARRELS and RIFLES

7mm. Caliber *270 Winchester*

More and more discriminating American hunters are discovering Niedner 7mm. rifles.

They are just as accurate as the 30-1906, and the gun can be made a pound lighter with equal relation to cartridge and recoil.

Nearly 3000 f.s. velocity with 139-gr. bullet. More than 2500 f.s. velocity with 175-gr. bullet.

We are now tooled up for making barrels of the new 270 Winchester caliber.

Let us quote you on high grade chrome-nickel steel barrel for this 3160 f.s. velocity cartridge.

These and other barrels are made to any specifications within 1¼ inches in diameter and 30 inches long.

Write for particulars of these barrels and of worked-over actions. Niedner rifles are unexcelled in accuracy and are reasonably priced.

NIEDNER RIFLE CORPORATION
Dowagiac, Mich.

The B. S. A. Match Rifle No. 12

Made and guaranteed by the Birmingham Small Arms Co., Ltd., has a record of remarkable results behind it.

Send for interesting literature on B. S. A. Match Rifles, Air Rifles, Double Barrel Shotguns, Firearms, Accessories, etc.

JONAS B. OGLAEND, INC.
U.S.A. DISTRIBUTORS
Dept. 19 16 Moore Street New York
CANADIAN REPRESENTATIVES: Fraser Co., 286 St. James St., Montreal, Canada

FIALA PATENT SLEEPING BAG

You can sleep outdoors in perfect comfort

"You have the best light-weight bag made."
—Dr. C. P. Fordyce.

Scientifically Correct

Made like the fur of an animal, it retains the body heat, but **not the moisture.** No dead air spaces to become foul or soaked, as in a closely woven or filled fabric. Weighs about 5 lbs.

Mirakel 5x Prism Binoculars: genuine Jena; "Explorers" weighs only 5 oz. $22.50

High Grade Imported and Domestic Shotguns and Rifles.

Camping, Hunting, Touring, Engineering, Exploring Equipment.

Hensoldt Rifle Telescopes; Binoculars; Portable Microscopes.

Write for Folder

Let us furnish estimates

FIALA OUTFITS, Inc., B25 Warren St. New York

LYMAN SIGHTS

Better Your Aim

Write for Catalog

The Lyman Gun Sight Corp.
90 West St Middlefield Conn

HOFFMAN 20 Minute GUN BLUEING

This is the blueing used by the Hoffman Arms Company on all fine built-to-order arms. Recommended by Major Townsend Whelen, Capt. Crossman, Chas. Landis, Capt. Askins, and every arm expert and authority in the country. Don't risk disappointment with a worthless "lacquer" or "paint" under the name of blueing. Hoffman Gun Blueing is the only solution on the market for 5 years, sold under a money-back guarantee. Anyone can do a beautiful and lasting job of blueing in 20 minutes by following the simple directions.

Send money order for $2.50 for bottle—enough to blue six guns. Money back if not satisfied.

THE HOFFMAN CHEMICAL CO., Ardmore, Okla.

Webley Air Pistol

Develop your marksmanship with this perfectly accurate and powerful air pistol. Shoots skirted lead pellets. At 10 yards will group within an inch. Practice silently at home or outdoors. Powerful enough to kill small game. **No permits needed.**

Has the Look and Feel of a Fine Automatic

See the new WEBLEY AIR PISTOL at your dealer's—or sent direct by mail for $15, including cleaning brush and pellets.

Write for illustrated Booklet "N" WEBLEY & SCOTT, LTD., since 1863 leading English makers of Shotguns, Rifles, Pistols and Revolvers. On display at our showrooms—or send for Illustrated Catalog "N.N."

Sole U. S. Agents

THE HOFFMAN ARMS CO.

100 East 42nd St. New York City

Highest Grade Genuine

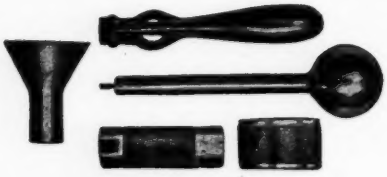
ZEISS *TELESCOPE SIGHTS*

$37.50

We offer a limited quantity of new 6X "Zielmulter" Scopes, complete with mounts for Mauser action rifles. These were brought in under low tariff. Present price, $60. Achromatic crystal clear lenses, wide field. Adjustable for range and windage. The finest and highest quality scope made in the world. Special price while they last, **$37.50.** Will ship C. O. D., subject to examination, on receipt of $5.00 check or M. O. Order yours today.

BAKER & KIMBALL, Inc.

34 South Street Boston, Mass.



Loading Tools

410 Brass Shot Shells. Also Pistol, Revolver and Rifle Cartridges.

Hand Book and Catalog, 10 Cents

MODERN-BOND CORP.

813 West 5th Street, Wilmington, Del.

Shooters' Supplies and Accessories of Every Description.

Now settled down in my new location where I have bigger and better facilities for filling the orders of my friends.

Remember the new address:

P. J. O'HARE

552 IRVINGTON AVE. MAPLEWOOD, N. J.

The Gunowner's Manual

Amateur Gunsmithing

BY

Major Townsend Whelen

Essential to the man desiring an individual weapon; valuable to every owner of a rifle, pistol or shotgun, and ready for immediate delivery.

A comprehensive boil-down of gunsmithing methods adaptable to the home shop and tool kit.

Since its appearance as a serial in THE AMERICAN RIFLEMAN, "Amateur Gunsmithing" has been materially enlarged and elaborated. There are additional chapters, including discussions on repairs to revolvers, pistols and shotguns. An exhaustive appendix has been added containing special information upon methods of dismounting and assembling the mechanisms of the better known hunting and military arms, the removal of metal fouling, the making of sulphur casts and tables of barrel dimensions which will be found invaluable to the amateur gunsmith.

The volume is substantially but attractively bound in buckram, is adapted to ready and convenient reference, and contains 175 pages of real dope from a man who knows his stuff.

Price, Postpaid, $2.00

To Members of the N. R. A. a discount of 25% is given.

THE AMERICAN RIFLEMAN

BOOK DEPARTMENT

1108 Woodward Bldg. Washington, D. C.

Send 10c for Sample

TO CLEAN THAT GUN

Use Hoppe's Nitro Powder Solvent No. 9

Removes all primer and powder acid residue and leading and metal fouling. Prevents pitting. Will keep the bores and rifling of shot guns and rifles rust-free and preserve them like new. There is no substitute for Hoppe's. Make sure you get it. Uncle Sam O.K.'s it.

Use Hoppe's Lubricating Oil for the Working Parts

FRANK A. HOPPE, Inc.

2321 No. 8th St. Philadelphia, Pa.

Fecker Scopes are the first and only choice of the shooting champions.

They are used by such leading shooters as, F. E. Border, L. J. Corsa, J. W. Gillies, J. W. Hession, J. M. Hilborn, C. J. Johnson, R. H. McGarrity, L. Nuesslein, F. W. Parker, Russel Wiles, Sr. and Jr., and many others, because they constantly bring results. You can not go wrong by following the leadership of the champions.

Spotting Scopes, Telescopic Sights and Mounts

Get a Fecker Scope for Results

J. W FECKER

5606 Euclid Avenue Cleveland, Ohio

"Clean as a Whistle"
350
MARBLES
Cleaning Implements
make it easy to have a clean gun.
Jointed Rifle Rod
When screwed together it's as solid as a one-piece rod—can not wobble, bend or break. 3 brass sections, 2 steel joints, steel swivel at end, 26, 30 and 34 in. long. State length and caliber. $1.25
Rifle Cleaner
Thoroughly cleans without injuring finest rifle—removes all lead, rust, powder residue. Softest brass gauze washers on steel wire—may be attached to any standard rod. 50c. State caliber wanted.
If your dealer can't supply you, order by mail.
Marble Arms & Mfg. Co., 502 Delta Av. Gladstone, Mich.

Notice to N.R.A. Members

A limited number of Model 52 Winchester Rifles with Old Style Stock and Telescope Mounts attached are now available through the N. R. A. SERVICE CO., at the former price of $32.00 each.

Orders will be filled as received.

N. R. A. SERVICE CO. Inc.

1108 Woodward Building

Washington

The Arms Chest

TERMS

THE uniformly excellent returns from advertisements appearing in the classified columns of THE AMERICAN RIFLEMAN make it a most satisfactory and productive medium for the disposal of surplus shooting equipment, or the acquisition of special types of firearms.

Free Insertions. Each subscriber is entitled to one insertion of one-half inch, when his subscription is paid for one year. It is necessary only to write or print the text plainly, noting thereon the date subscription was paid. These advertisements will appear in the first available issue and should be in publication office two weeks prior to the following publication date.

Paid Insertions. Non-subscribers or those who have already made use of the subscriber's privilege may take advantage of these columns at a cost of $1.00 per inch or part thereof. No advertisement for less than $1.00 accepted. Advertisements will be set in 6 point solid. They should be in the publication office two weeks prior to the time appearance is desired.

WANTED—Ideal lubricator and resizer. Ideal muzzle resizer for 7.63 mm. or .30 Mauser or Lugur Auto. pistol cartridges. Art. Quinn, Proton Sta., Ontario, Can. 774

FOR SALE—One set Winchester Scope Mounts, $4.00. One Parker-Hale Telescope Tripod, $2.50. Seward W. Fisher, 311 Church St., Herkimer, N. Y. 758

GUN BLUING—Simple 15-minute process, not a paint, used for years, unexcelled, enough for 15 guns, $1.25. Pacific Arms Corporation, Box 427, San Francisco, Calif. O

FOR SALE—New guns at discount to members N. R. A. Also number of used guns priced right. No list, say what you want. Member N. R. A. Earl J. Russell, Monmouth, Ill. P

CARTRIDGES—.45 Colt, not auto., $2.50 per 100, $22. per 1000. (absolutely perfect). 7 mm. Mauser rifle f.m.p. cartridges, discolored by water, $4.50 per 100, $40 per 1000. Pacific Arms Corporation, Box 427, San Francisco, Calif. Q

SELL OR TRADE—U. S. Rifle Model 1917, cal. .30-'06, in fine condition. Made by Winchester, serial No. below 1500. Price $30.00. Would trade for Colt Revolving 1856 rifle as good, Sharps or Ballard rifles. Fred Wainwright, Grayling, Michigan. 788

FOR SALE—Peterson Ballard target rifle, 22 L.R., 27" No. 3 octagon barrel, weight 12 lbs. Pacific Ballard action, pistol grip set on lever, scope blocks, action like new, inside barrel perfect, accuracy perfect, stock brand new, beautifully figured walnut. Price $50.00. Peterson Winchester 22 L. R. 30" round barrel, weight 11 lbs., entire gun perfectly new, walnut stock, pistol grip on lever, Lyman 48 rear sight, special detachable front sight, accuracy perfect. Price $75.00. Cost me about $120.00. Union Hill Ballard set trigger action with 32-40 barrel, poor condition. Price $15.00. Very old Ballard 38-50, relic, original Ballard barrel. Price $5.00. Hunting rifle 32-20, Colts Lightning, 7 lbs., 24" octagon barrel in exceptional condition, beautiful walnut stock, pistol grip, exceptionally fine case hardened action. Price $30.00. Reising automatic pistol, 22 L. R. with holster, new. Price $25.00. Springfield sporter by Griffin and Howe, weight 8 lbs., 22" star guaged barrel, fixed aperture rear sight, matted ramp, gold bead front, receiver drilled for Lyman 48, test fired only. Price $100.00. Cost me $140.00. Will trade in any of above for Springfield pressure barrel in perfect condition. J. M. Hillborn, 43 E. 19 Street, New York, N. Y. 793

FOR SALE—Ideal No. 3 D. A. tool, 22 Hi-Power; $3.75. Colt's cal. 56 mold, casting one round and one conical ball, perfect; $3.00. Resizing dies; 45-70, $1.00; 45 Colt, 85 cents; Krag or Springfield neck resizing, 65 cents. 58 cal. mold, casting hollow base, grooved bullet, perfect; $2.50. Collection 200 ancient and modern cartridges; $9.00; collection 100 ditto; $4.50. Cal. 30 Krag carbine, bore perfect, very good condition; 60 ball and 100 short range cartridges; $14. Bannerman's 1913 catalogue, bound; $3.00. F. A. 4-Ball (round) 45-70 mold, perfect; $4.00. History of Rem. Arms-UMC 1912, bound; $1.25. 30 cal. shell chamfering reamers; 85 cents. Snare barrels, cal. 36 Rem. C&B, 7½-inch. bore fine; $1.35. Ideal Loading Press, with equipment for 30 Krag cartridge; $15.00. S&W single action revolver, cal. 44 S&W Russ.; $15.00. 22 cal. 7 shot 10-inch bbl. target revolver; $7.00. 19 rounds 40-70 Ballard; $1.00. 39 rounds 40-70 S.S.; $2.00. Transportation extra. WANTED—Ideal powder measure No. 6. B. K. Wingate, R-2, Reading, Penna. 792

FOR SALE—Brand new Parker 10 ga. hammer gun. Not a scratch or spot inside or out. Factory card shows each barrel to throw 196 No. 6 in 30 circle at 40 yards, $35.00. Martin J. Carlson, Barry, Minnesota. 735

FOR SALE AND TRADE—Colt revolvers at bargain prices. Everyone guaranteed factory new. Officers' Model 6—7½-inch barrel, $32.60. .44 New Service 7½-inch barrel, $28.00. .41 Army Special 6-inch, $24.00. Reising .22 Automatic complete with Reising Cleaner and extra magazine, $33.00. .22 Colt Automatic, $30.00. .22 Fiala Outfits, complete with stock and three barrels, $16.00. Genuine Hensoldt, Wetzlar Pocket Microscopes 25-X to 225-X, with illuminating device and directions, and certificate of guarantee, $28.75, or Hensoldt Microscope separate $20.00. Hensoldt Dialyt Prism Binoculars with case and straps and certificate of guarantee at the following prices: 6 x 25 Universal Dialyt $50.00. 8 x 26 Travel Dialyt $52.00. 6 x 36 Ideal Dialyt $60.00. Sept. Moving Picture Camera, uses standard size film, no tripod necessary, fine for hunting pictures, complete with case and 4 extra magazines, carrying case and straps. Latest model $57.50; film for same $1.00 per reel. These cameras are brand new and made in France. Genuine C. P. Goerz, Berlin Prism Binoculars, 6 x 21 central focusing, $31.00; 8 x22, central focusing, $35.00; 12 x 24, central focusing, $49.00. 6 x 30 Individual focusing, $48.00. All above are new. Satisfaction or money back. With each glass is included a genuine leather case and shoulder strap. Will take in trade shotguns and foreign arms if price is right. Mills English Combination Cane and Seat. Tourist Model, $11.00. Elite Model, $13.00. Regal Model $16.00. Combination Cane Umbrella and Seat $18.00. Combination Cane with Saddle Seat $14.00. These seats are popular for shooting and other sports. Watson Luminous Sights for night shooting with .45 Colt Automatic $4.50; for Sporting Springfield, $4.50. These sights can be attached in a moment without tools and need not be removed for daylight shooting. H. Roedder, Bangor, Penna. 744

FOR SALE—L. C. Smith double hammerless, 12 ga., ejectors, fine, $50. Fox 12 ga., good, $30. Fox 20 ga., ejectors fine, $50. Colt 12, double hammerless, fair, $40. Stevens 12, double hammerless, good, $18. Remington, double, 12, hammers, good, $25. Double gun, shot and rifle, muzzleloading, good, $15. Winchester Musket, .22 L.R. Winder pattern, fine, $17.50. Winchester single shot .40-82, fine shooting order, $15.00. Remington, .40-65, cartridges and tools, fine, $25. Savage 303, lever action, take-down, fine, $30. Sharps Borchardt .32-40 Schuetzen, good, $20. Ballard .38-55 Schuetzen, double set, fair, $20. Ballard .32-40, single trigger, long barrel, fair, $15. Maynard 32, needs reboring, $12. Howard single shot rifle, .44 flat, fine shape, $15. Spanish Mauser, fair $10. Austrian Mannlicher, military, fair, $10. Mannlicher sporting rifle, prewar, fine gun, $40. Springfield, Lyman sight, $35. Sharps 50 caliber carbine, good, $6. Stevens .22 L.R., new barrel, fine, $18. Stevens 25 and .25-21, fair, $15 each. Stevens British model, barrel needs relining, $10. Colt .44 New Service, fine, 4¼-inch barrel, $22. Fine double barrel flintlock shotgun, $35. Flintlock, Kentucky rifle, fine specimen, very old, $50. Good looking muzzleloading rifles, $15.00 up. Describe your wants, no lists. Mound molds for muzzleloading rifles or .44 precussion revolver at $1.65 postpaid. Brass and German silver butt plates, trigger guards and patch box castings for muzzleloading rifles. I have set trigger plates. Send 10 cents for description of a new loading tool. It has all of the good ideas and no poor ones. P. L. Johnson, 5904 Harvard St., Pittsburgh, Pa. 682

TARGET SHOOTER'S OUTFIT, READY TO USE—One National Match Springfield Rifle with brand new stargauged barrel. Fired about 50 shots. Lyman B No. 48 sight on rear. Thos. Martin aperture front sight. Blade front. Regular rear sight. Detachable butt plate hook and detachable palm rest. Sling complete, steel cleaning rod and also pull through complete, sheep skin padded. comb. Trigger pull fine. Also spotting telescope, 20 power with rest irons. O'Hare micrometer, bullet lubricator. Rifle is a very fine shooter and can group into 4 inches at 200 yards, with good holding and ammunition. Owner is a gun crank who is retiring from game. Price $45.00 complete. Edward L. Crabb, Shoshoni Rifle Club, Shoshoni, Wyo. 761

FOR SALE—.250-300 Hoffman-Mauser, 24-inch barrel half-rib three folding leaf sights, regular Hoffman front. Hoffman Bolt Sleeve rear, also tapped for Lyman No. 48, Jostam Pad Cheek Piece, engraved, new and perfect, cost $235.00. Write for price and further particulars, sell Bolt Sleeve sight separate for $15.00. .25 Niedner H. P. barrel 24-inch with Springfield type front sight with Ivory Bead, already to screw into Springfield action, new and perfect, cost $36.00 complete, sell for $25.00, 190 empty cases to fit, value $11.30, sell for $7.00, new Niedner Loading tool for same cost $6.00, sell for $4.00, or sell whole outfit for $30.00. Springfield Sporter, specially selected action, Star-gauged barrel, fancy walnut stock and Silvers pad by Shelhamer, pistol grip with horn cap, barrel polished and blued entire gun new and perfect, Gold Bead front and Lyman 34 rear, receiver tapped for Lyman 48, sell for $80.00. Remington 25-.32-20 new and perfect $30.00. Remington .30 Auto perfect $40.00. Winchester .30-06 Musket fine $28.00, Model 95 Win. 95 .30-40 solid frame, 24-inch round, Shear Gold Bead front, Lyman receiver rear, very fine $35.00. Stevens .22 L. R. Armory, never used, factory sights, $19.00. Winchester Model 92 .32-20 24-inch round solid frame, factory condition $24.00. Model 92 .44-40 24-inch half-octagon, take-down, Sheard Gold front, King Buckhorn rear perfect condition $27.00. Rheinmetal 16 ga. auto 28-inch full choke brand new $60.00. Ithaca No. 2-12 ga. 28-inch full and Mod. Beaver Tail forend, Miller single trigger, Silvers pad, beautiful stock, cost $125.00, perfect shape $65.00. Fox CE grade 16 ga. with DE grade stock and forend. Silvers pad, Ivory sights, 30-inch barrel right Imp. Cyl., left full, weight 7 lbs., cost $145.00, new and perfect a beautiful gun and a wonderful shooter, sell for $100.00. Parker DHE 16 ga. 28-inch barrels, right imp. cyl., left full, weight 6½, beautiful shape, sell for $100.00. Fox AE 12 ga. 30-inch full and mod. Silvers pad, weight 7½, never used perfect, $60.00. Win. .351 Auto very fine $30.00. Model 1917 .30-06 remodeled by Niedner identical to Remington Model 30, Remington stock, Niedner peep rear on receiver, all parts except receiver are new including barrel, a fine sporter for only $35.00. Newton .30 cal. rifle original Newton, sling swivels, perfect condition $30.00. .410 H and R Handy Gun 8-inch barrel new $10.00. Remington .380 Auto new $12.00. Colt S. A. Army 5-inch barrel .32-20 perfect $25.00. Colt .22 Auto very fine $25.00. Winchester 94 .30-30 26-inch round very fine $16.00. Savage 99 .30-30 solid frame 26-inch round very fine $27.00. Winchester Model 12-20 ga. 25-inch modified perfect condition $39.50. Stevens offhand 25 R. F. 6-inch perfect $8.00. Stevens No. 10 .22 L. R. Target very fine $9.00. Carl Schutz 10 x 50 Binoculars leather case and straps, perfect, value $90.00, sell for $40.00. Hensoldt-Walker 8 x 24 case and straps, new, value $42.00, sell for $30.00. Wollensak $5.00 Biascopes, $4.00 each, new. Satisfaction guaranteed or money back. Express C. O. D. examination allowed. Geo. A. Goeke, 43 West Main, Waukon, Iowa.

WANTED—No. 44 Stevens Action, outside finish of no consequence, cal. .22 preferred. Heavy S.&W. .22 Rev. with damaged barrel. G. Titherington, 1321 S. American St., Stockton, Calif. 775

FOR SALE—Bond Powder Measure, $8.00. One Ideal Star Crimper for power or handle use. Good, used condition with 6 crimping heads for 10-12-16 and 20 ga. shells. $12.00 for the lot. One No. 2 loading chamber, 12 ga., for Ideal bench shotshell loading machine, $3.00. One No. 1 loading chamber 10 ga. with adapters for same machine, $3.00. One Celluloid rod, .30 cal. rifle, $1.50. One thousand M. 1922 cal. .30 gallery practice bullets, Government make. 140 gr. lead sized and lubricated, $3.50. J. J. Turner, 2419 16th Ave., So., Minneapolis, Minn. 779

FOR SALE—One .44 caliber Merwin and Hurlburt revolver, in new condition, a rare gun, $20.00. One .25-20 Model 92 Winchester, 24-inch octagon barrel, all in new condition and with special oil finished stock, Lyman No. 1-A, rear peep and gold bead front, a very fine gun, $20.00. One .45-70 Sharps, good shape, $10.00. New 8 mm. Mauser 24-inch barrel $8.00. 20-inch Mauser barrel chambered for .30 cal. Springfield cartridge, $6.00. New 16 ga. barrel full choke 26-inch for 1912 Winchester, $8.00. Kerr web slings, new for Springfield rifles, $1.00 each. Eastman 1-A special kodak, 6.3 anastigmat lense, Optimo shutter and range finder with plush-lined case in most perfect condition, worth about $65.00, real bargain at $35.00. Carl Zeiss genuine 8 x 40 binocular. This is his "Delactis" high power and wide angle binocular, a most wonderful glass, cost $97.00 rare bargain at $55.00 .32 power spotting scope, $20.00, or will trade for right good .45 Colt Single Action Army or Reising Automatic pistol. Want either one or a pair of .31 caliber Colt cap and ball revolvers. Prefer them with ivory handles and in a case but will take one if can't get pair in good enough condition. They must be in new condition. Will pay anything in reason, also want a right good muzzle loading Kentucky rifle, silver mounted, not too large caliber with molds. Let me know what you have. I buy, sell, trade and make guns. Let me know what you want. Chas. A. Evans, Gunsmith, Box 190, Sheridan, Wyo. 777

SELL—10x50 Carl Zeiss Prism Monocular $20. 8X German Prism Monocular $9. 300 Savage 99-G New Condition, $39. .30-30 Savage barrel 26 inches long, $22. 455 Webley & Scott Service Revolver, fine, $18. 25 Webley & Scott hammer model Automatic $12. 450 Smith & Wesson Target, 6½-inch barrel, Blue, Pre-War Break Open Model $23. 41 Colt D.A. 6-inch barrel, $10. 45 Sharps Target, Creedmore, $19. Fine 30-06 Schilling Pre-War Engraved Mauser, Lyman 48, $60. 8 mm. Austrian army Mannlicher, converted $20. 6.5 Norwegian Krag, As Issued, $35. 40-82 Winchester 1886, $11. 8 mm. Mauser Action Telescope Rifle with fine telescope sight, $35. 38-72 Winchester 1895 $15. 45-60 Winchester 1873, $10. Civil War Remington Musket Fine Shooting Condition $8. 32-20 Winchester 1894 Take-Down, never shot, stock and finish marred $28. .32-20 Winchester 1894 $11. Winchester 52, old model stock, $27. 303 Enfield 1914, $15. 44-40 Marlin $11. Winchester cal. 7.62 mm. Russian, 1895, $22. Mauser Army Rifle, 11 mm. Model 1871 $12. 30-40 Winchester 1895 Musket, $23. Krag Rifle $15. 30-40 Remington-Lee Bolt Action $25. 38 Smith & Wesson Hammerless, Nickel, $18. 22 Single Shot Perfected $20. 9 mm. Luger 8-inch barrel with Stock, Holster, Shoulder Straps, Magazine Pocket, not junk heap variety, $27. Pre-War Luger 30. Safety Grip, 4 5-8 inch barrel $28. 9 mm. Mauser Combination Carbine and Pistol, not war junk, $25. 32 Smith & Wesson Regulation Police, 6-inch barrel blue, New in Factory Box $24. Pre-War Colt Single Action 45, 5½-inch barrel, $25. 44 Rogers & Spencer $12. 32 Hopkins & Allen Police Break Open $10. 25 Pre-War Reform 4 barrel Pistol $15. 45 Colt D.A. Rod Ejector using 45 Webley, checkered wood grips, $15. 9 mm. Luger 4-inch barrel, not war junk $18. 9 mm. Steyr Austrian Army Automatic with cartridges, $22. Pre-War 38 Smith & Wesson Special Target, $30. German Hunting Sword with small knife, beautifully etched with Hunting Scenes in fine Scabbard, $15. German Spike Helmet $5. German 6 power Prism Monocular $8. 6x30 Bausch & Lomb Prism Binoculars, case $23. 12 power Atchison & Co., London Prism Binoculars, combined individual eyepiece and central focusing, $50. 10x50 Bush Prism Binoculars, central focus, New, $52. .44 Colt New Service 7½-inch barrel, New in factory box $27.50. 38 Police Positive Special 4-inch barrel in factory box New $23. 6x30 Carl Zeiss, Silvamar Prism Binoculars, case $30. 12X Carl Schutz Prism Binoculars, $39.50. 8x24 Voigtlander Prism Binoculars, case $24. 22 Fiala Outfit, 3 barrels and stock, New Never used in Factory Box $16. 45 Colt Automatic as issued $20. WANT—for cash or trade Smith & Wesson Encased Ejector, Colt Bisley, Springfield action and barrel, or separate, or complete rifle. Paradox Barrel or Complete gun. 20 Sauer or Daly. Gladly send any of my guns C.O.D. Deposit on Rifles. S. R. Bridge, 432 Seventh Ave., New York, N. Y.

FOR SALE—Pacific model original Ballard .22 Short, Long rifle, 8½ pounds, 24-inch octagon, original factory equipment including peep sight. First class condition. Like new except slight scratches on stock. Best offer takes it. John Finnup, P. O. Box 326, Colorado Springs, Col. 759

FOR SALE—Niedner Springfield, 26 in. heavy barrel, in perfect condition. Regulation stock cut off at front sling swivel, built out so as to make wide hand grip in front, pistol grip set in and close to guard. Rawley cheek pad. I ran nineteen consecutive bulls at one thousand yards with this gun, good buy at $55.00. Has Lyman 48-B micrometer receiver sight, blade front sight. Chas. A. Evans, Gunsmith, Box 190, Sheridan, Wyoming. 765

FOR SALE—Wm. Wurfflein special pocket rifle, 15-inches, 22-7-45 cartridge, detachable stock sidle telescope and mounts, $40.00. Stevens pocket rifle, 12-inch .22 Long Rifle No. 550 Stevens telescope, $22.00. Springfield .30-06 military, heavy pressure barrel, 12¼ pounds Lyman 48 sight, $65.00. Winchester 1886 extra-light nickel steel 22-inch, .45-70, pistol grip, 7 pounds, $30.00. Savage 1899 .303 cal. 30-inch special target barrel, pistol grip, sling, Lyman 2 rear sight, $30.00. Kirkwood Bros., Inc., 23 Elm Street, Boston, Mass. Established 1874. 739

BARGAINS—Fine old Sharps Borchardt .45 caliber, 30 in. open sights, shotgun butt, been used considerably but never rusted or abused, $15.00. Remington Hepburn .38-55 30 in. P. G. stock, Vernier rear and open front. A perfect barrel, shell and bullets, $18.50. Service Springfield in splendid shape in and out. Very smooth action and trigger with 750 rounds of ammunition from National Matches at Caldwell, N. J., $27.50. S. A. Colt's Army 7½ in. in almost new condition, with 100 ctgs., and 200 bullets, $22.50. S. B. Wetherald, Sandy Spring, Md. 772

FOR SALE OR TRADE—One pair 7-25 Weiss Binoculars, $25.00. One Model 39 Marlin .22 cal. rifle, new barrel and breech block, Lyman rear sight, $22.50. One set 7 volumes Encyclopedia of Engineering by Swingle, $20.00. WANT—One S. & W. Russian .44 single action, condition of barrel immaterial. To all owners of Remington Model 24-22 automatics, send me 50 cents and I will send you by return mail a take-down tool for taking breech block out of trigger guard without dismounting action spring. Reuben E. Brown, 124 Franklin Ave., Bend, Ore. 754

FOR SALE OR TRADE—One Carl Zeiss 6-power rifle telescope and mounts (new) $21.00. Winchester .25-20 new, with Lyman peep sights and case, $29.00. Russian Sporter (new) 7.62 mm. $10.00. Remington 1917 shells for same, $4.00 per 100. Nestor Johnson Tube hockey skates, size 9, with shoes and straps, $9.50. Colt .22 Automatic pistol, good, $15.00. .22 cal. Stevens repeating rifle, good, $9.00. .30 cal. Standard Automatic rifle, fine, $18.00. Eight-power field glass Spindler and Hover make and new, with case, $10.50. WANT—Fiala—combination pistol. Long barrel Luger or Mauser, or .30-'06 rifle. Robert J. Goudy, Cannon Falls, Minnesota. 782

FOR SALE—Dark oak gun cabinet, space for 10 guns, drawer for supplies, $40.00. N. R. A. Savage tapped for Winchester scope blocks, 2 extra magazines, never fired, $18.00. Newton '06 Government, Jostam recoil pad, Newton swivels, Lyman 48 sight, extra Sheard 1-16 in. gold bead front sight, $60.00. 1912 Winchester 12 ga., 2 sets of barrels 30 in. full choke, 26 in. cylinder, Jostam pad, $65.00; 4E Ithaca single trap gun, Jostam pad, Lyman sights 32 in. barrel, $75.00. Elliott sole leather case for same, $15.00. 32-20 Marlin serviceable $15.00. 2 Mills pocket belts '06 Government no army goods $1.50 each; 5 power Malcolm scope Winchester mounts on V blocks, $15.00. WANT—16 ga. Fox or Smith with single trigger; .32-20 Colt police positive special. Carroll Caruthers, 1st Nat. Bk., Greensburg, Pa. 785

FOR SALE—The most accurate rifle in Denver. Pressure barrel, 30 inch, 13 lbs., double set triggers handworked like Elgin watch, fired 1000 times, pistol grip checkered, Springfield with Remington barrel (Walker's own work), 1906, made for the U. S. International Olympic Team for 1924 that broke the World's record. See page 14 "American Rifleman" February 1, No. 28. F. A. official machine rest group 300 meters (not yards), fifty shots extreme vertical 3.36 inches. Extreme horizontal 2.42 inches; figure of merit 2.89 inches. Rifle No. 1,257,711, with numbered bolt. Rear No. 48 short Lyman sight, WRA. scope blocks, front sight WRA, hood aperture peep. Guncrank condition, altered in no way whatsoever since leaving factory. Will put 7 x 10 holes on a silver dollar at 200 yards, handholding, scope, and rest, with handload cartridges. Reason for selling—Doctor's orders. Price F.O.B. $150.00. Draft, wire, or P.O., no checks, nor trades, nor C.O.D. The finest rifle I ever owned or shot. Chauncey Thomas, 1627 Lawrence St., Denver, Col. 748

WANTED—Krag and Russian 7.62 ammunition. Paul K. Rau, Wakefield, Kans. 760

HUNDRED GUNS IN STOCK—Stamp for list, trade guns with Henry F. Zinner, Middleburgh, N. Y. N

EXCHANGE—.22 Colt P. P. Target (good), for .45 Colt Auto. or Marlin 92-32 R. F. O. A. Trandum, Rt. 1, Box 8, Oslo, Minn. 767

WANTED—Colt Single Action, .45 cal., 7½ inch barrel. Elmer Scott, Box 342, North Hibbing, Minn. 734

WANT—Copy Whelen's "American Rifle" in fair condition for $3.00 postpaid. Lock Box 206, Elgin, Kane Co., Ill. 752

FOR SALE—700 rounds Springfield .30-06 Winchester '18, $10.00. E. M. Newcomb, 1949 Biltmore St., Washington, D. C. 732

SHIFT WITH THE HOUSE OF SHIFF THE GUNMAN, N. Woodstock, N. Hampshire. The last price list for 1925 will be out in a few weeks. Our stock is very complete and summer prices hold until October first. We are stealing second base from the fanatics. If you can read and FIGHT you will get your money's worth if you care to ship your stamp. S

SALE OR EXCHANGE—351 Winchester Self Loading, sling swivels, checkered, excellent inside and out, $23.50. 414 Stevens .22 L. R., Tang WG sight, scope block, sling, excellent, $11.00. Lyman Receiver Sight (new) No. 35 W.G. for Mauser, $5.00 cost $10.00. Can use shotgun in exchange. Lieut. W. E. Kessler, 1105 Maple St., Des Moines, Ia. 769

SELL OR TRADE—Bond double cavity mold .30-180 gr. .45 mold for revolver, round and conical bullets, .32 mold for round ball, 50 cents. All like new. 30 x 3½ cord tire and tube, never unwrapped, green visor headlight lens 8¼ in., 5 x 7 camera and outfit. Cost over $75.00. WANT—.32-20 revolver or Springfield Sporter. Box 638 Ellwood City, Pa. 789

FOR SALE OR TRADE—D. H. E. Parker, modified and cylinder good, good. Winchester Tour Grade Model 12, 12 ga., fine. Model 73, Win. .44 W. C. F., fine. S. A. Colt's .44-40, 7½ good. WANT—Parker, Smith, Fox, 12 ga. 30 in. barrels, full and mod. drop 2½ in., good serviceable condition, high grade guns only, stock for Springfield Sporter as issued. Dr. Thos. J. Pearson, Roswell, New Mexico. 786

FOR SALE—Paterson Colt shotgun, LeMat revolver, Colt London Navy, 56 different priced auction sale catalogs, 50 books relating to firearms, including Sawyer's Vol. 1 and Vol. 2 "Revolver;" U. S. C. Co. Lowel collection; Simeon North "First Official Pistol Maker." Also pistols, revolvers, rifles, and carbines to sell or exchange for Colts, Winchesters or Smith & Wessons. J. C. Harvey, 872-880 Main St., Worcester, Mass. T

SELL—.22 Win. S. S. 30 in. No. 3 round brl. take down, double set triggers Swiss nickel butt plate, 4 power Stevens scope, palm rest, mid-range Vernier rear peep. Lyman micrometer globe front. Perfect condition in and out except bluing on barrel shows very slight wear. Never shot from rest but makes dime groups 25 yds. off-hand regularly, $40.00. .32-40 Marlin Carbine, oct. brl., bead front, Lyman tang peep, saddle holster, 160 factory loads, 60 mtys., broken shell extractor, Ideal 165 gr. mold, Win. reloading tool, Ideal resizer, Stevens De and Re-Capper. Brl. in fair shape, a dandy hunting arm and very accurate, $20.00. 500 mty. .25-20 shells, $1.50. SELL OR TRADE—.25-35 Win. 1894, 26 in. round brl., half mag., steel cor. shotgun butt, light trigger pull, Lyman gold bead front, King Auto micrometer tang peep, 3 discs, B. & M. one piece steel rod Ideal 111 gr. mold, new resizer .259, Stevens De and Re-Capper, broken shell extractor (never used), 200 111 gr. bullets, box 117 gr. cart., few mtys. This gun in perfect new condition in and out, shot about 75 times. $32.00 or trade for S. & W. .44 Snl. Target Model with reloading tools, etc. WANT—Round Ball Mold .458. M. B. Marr, Durango, Colo. 764

Wanted!

American Firearms. Hunt up your discarded firearms. Have your friends do likewise. In every family there are firearms discarded as being obsolete. Many times what are considered valueless would be very valuable to me, a collector. Send a list of what you or your friends have. If the pieces are what I want I will offer a price better than any dealer. You can make the dealer's profit if you sell to me. —S. Harold Croft, Bala-Cynwyd P. O., Pa. 737

Get Every Point You Earn in 1926

Your rifle does not make you a greater shooter than you are but it has a lot to say about your getting full credit, in the final score, for your skill. In indoor tournament or outdoors you need every point you earn.

The WINCHESTER Model 52, the supreme .22 caliber target rifle for indoors and out, gives you the benefit of all you hold for. Its accuracy and dependability are heart cheering.

In the Dewar International trophy match at Camp Perry for 1925, E. F. Shearer of Renovo, Pennsylvania, made the highest score that has ever been registered in this famous match, 398x400. This is some feat. He used the WINCHESTER Model 52 and Precision ammunition.

In the N. R. A. indoor matches last winter eight of the nine individual championships at 50 feet and four of the six at 75 feet were won by shooters who used Model 52.

The indoor matches of 1925-26 are now on. Are you using the rifle that gives your opponent no handicap—the WINCHESTER Model 52?

Most shooters who use the Model 52 also use WINCHESTER Precision ammunition,—Precision 75 for indoors and the shorter ranges and Precision 200 for the longer ranges,—to get the maximum results of the great WINCHESTER combination.

Model 52 and Precision are made for each other and victories.

WINCHESTER REPEATING ARMS COMPANY

New Haven, Conn., U. S. A.

WINCHESTER

"Put the Vermonters ahead"

AT the beginning of the battle of Gettysburg, July 1st, 1863, the Sixth Corps was at Manchester, 32 miles away, and received a hurry call to proceed to Gettysburg as quickly as possible.

It was then that General John Sedgwick, knowing the reputation of the Vermont troops for marching, gave the order: "Put the Vermonters ahead, and keep the column closed up!"

The Corps, led by the pounding boots of the sturdy New Englanders of the 172nd Infantry, made the 32 miles in one day—one of the most remarkable forced marches in military history.

E. I. DU PONT DE NEMOURS & CO., Inc.
Wilmington, Delaware

DU PONT

Du Pont Powder has been inseparably connected with the combat history of every organization in the Service. In 1802, practically all du Pont Powder was made for military purposes. Today, 98% is produced for industrial uses.